

# THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

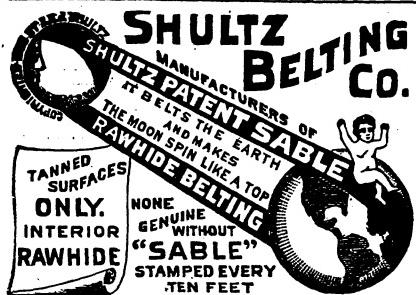
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Reading Matter Contents.....page 1454  
Classified List of Advertisers.... " 103  
Alphabetical Index to Advertisers " 107  
Advertising and Subscription Rates " 1461



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**BRIDGEPORT, CONN. SEE PAGE 3.**

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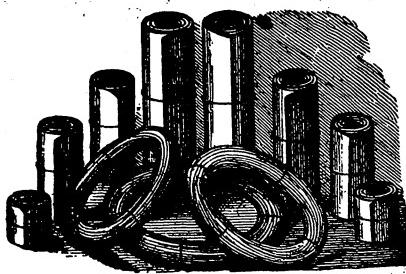
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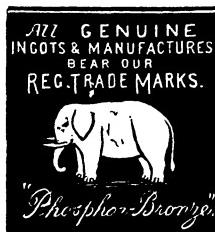
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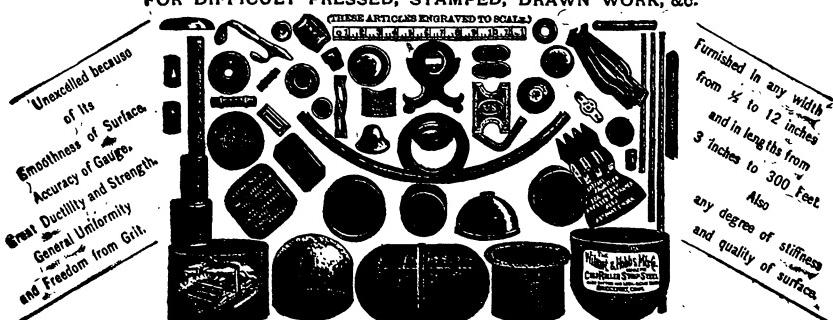
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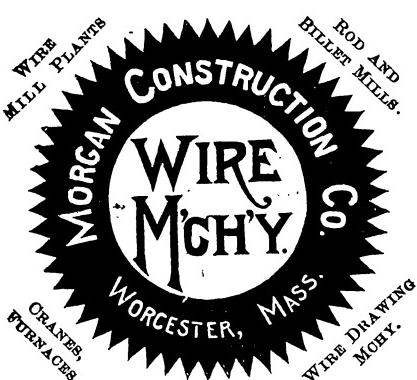
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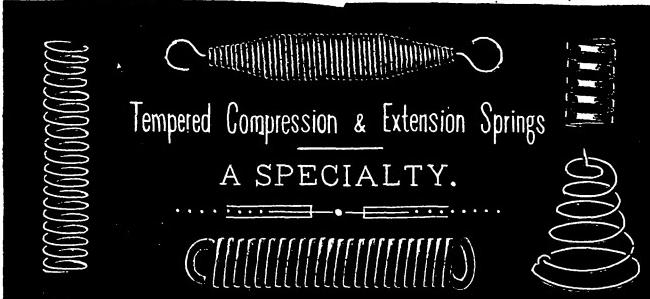


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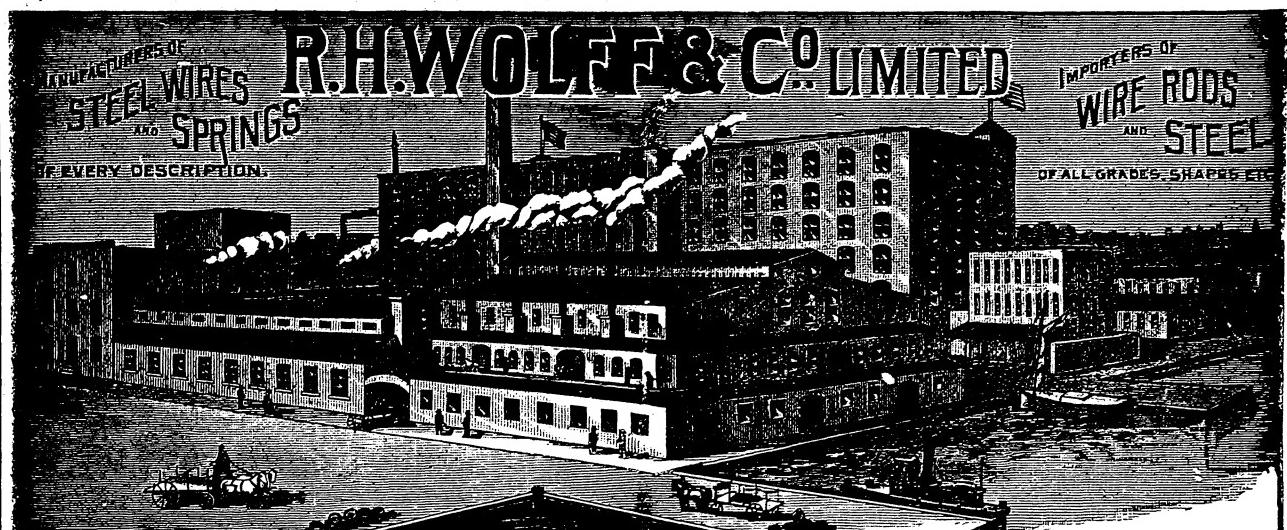
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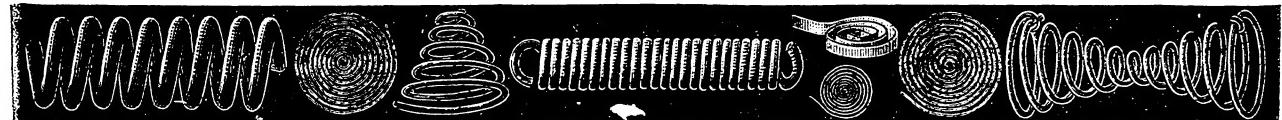
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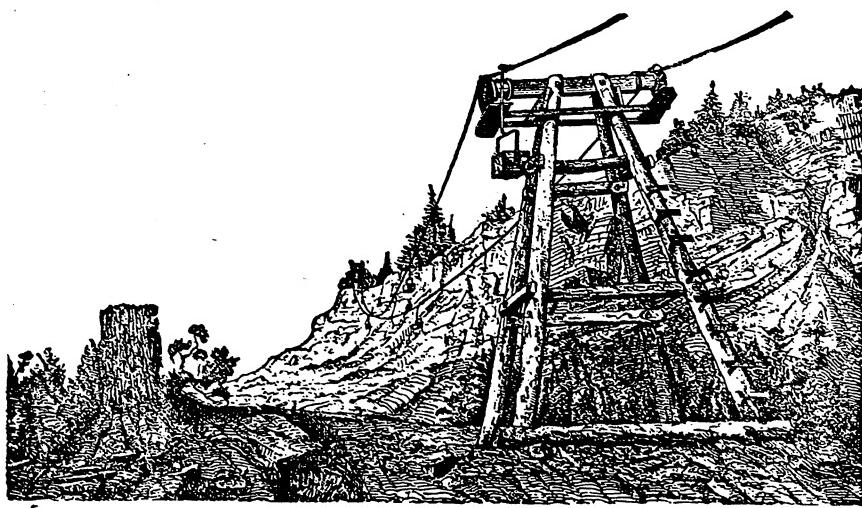
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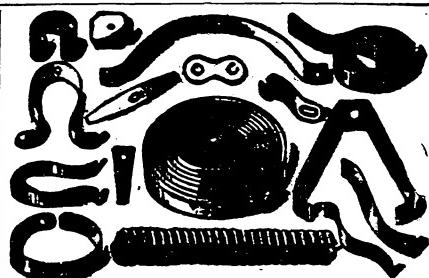
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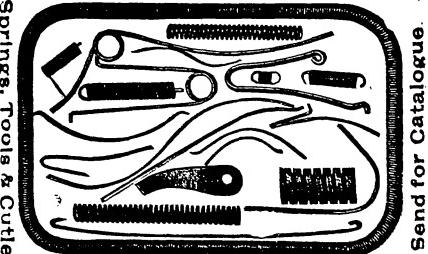
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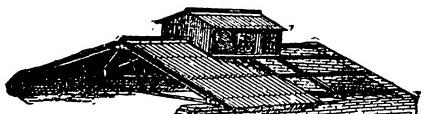
**F. H. ARNOLD,**

Designer

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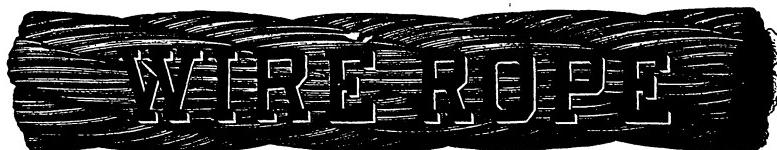
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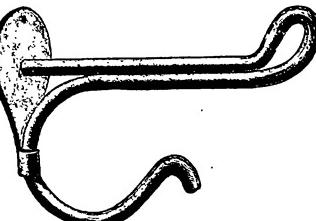
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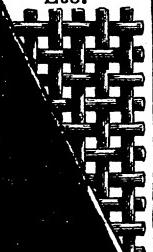
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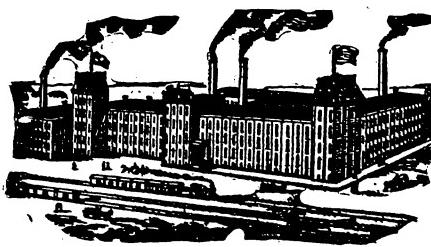
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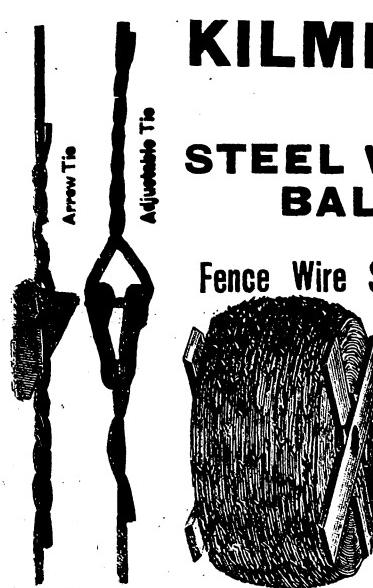
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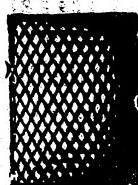


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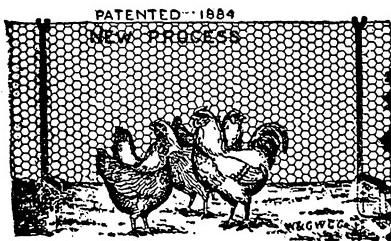
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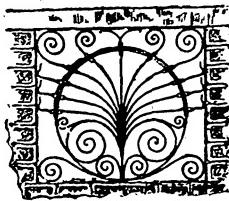
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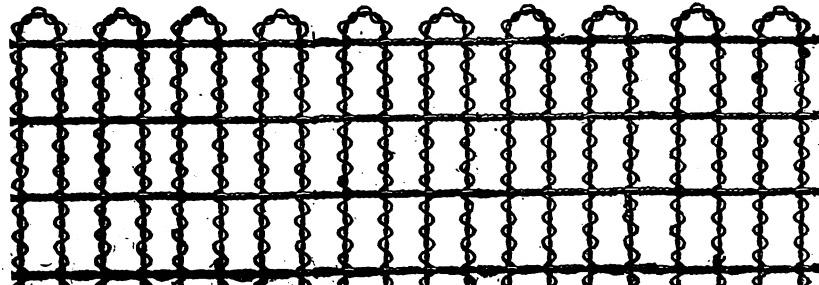
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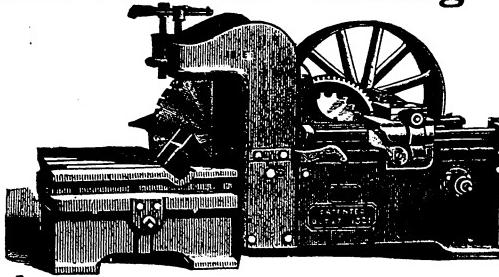
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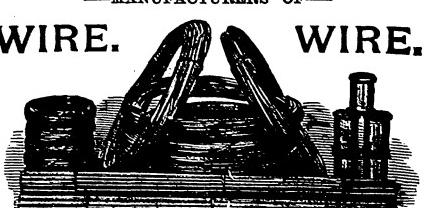
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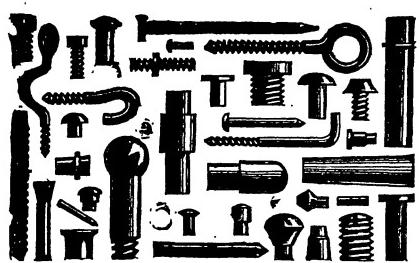
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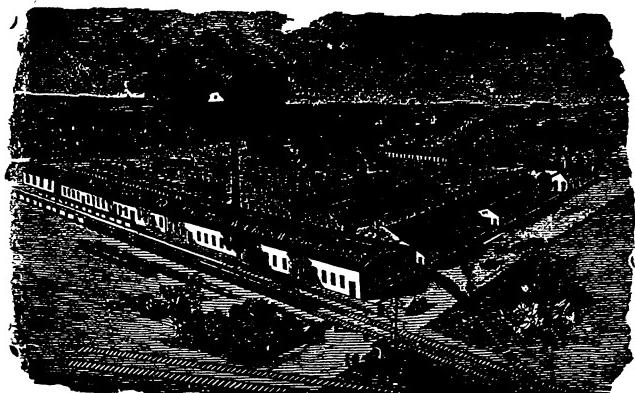
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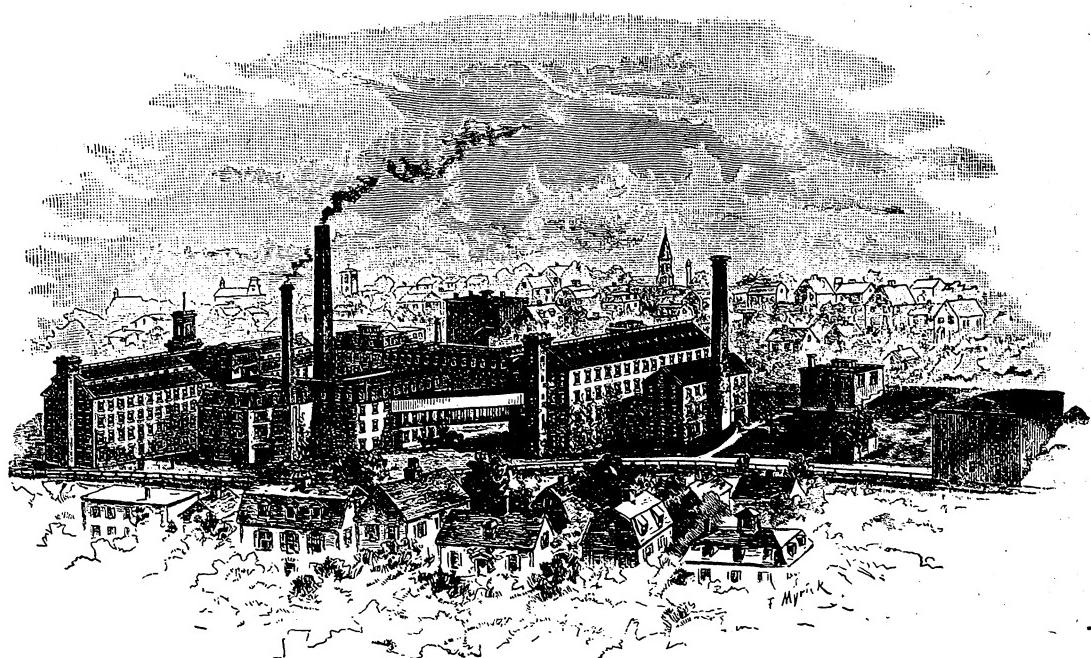


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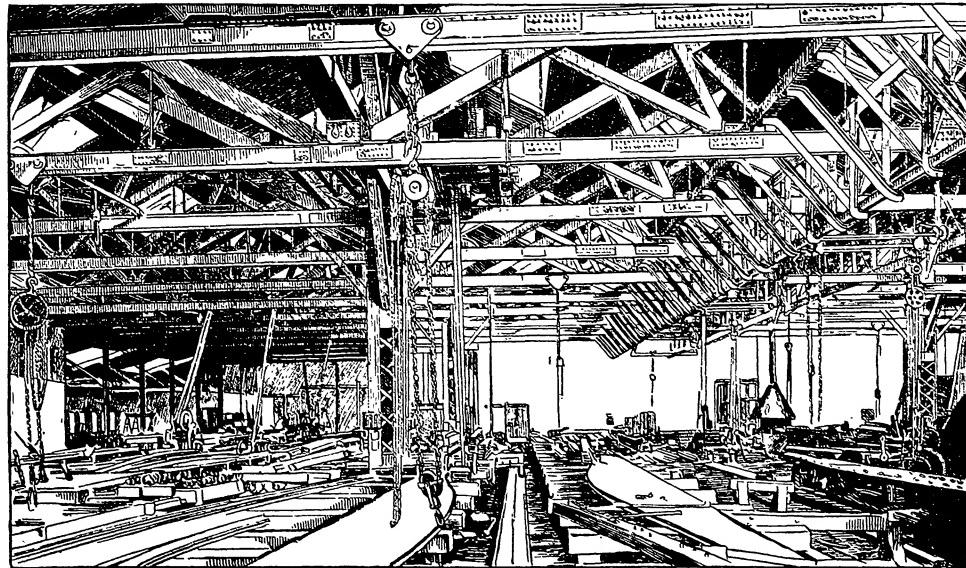
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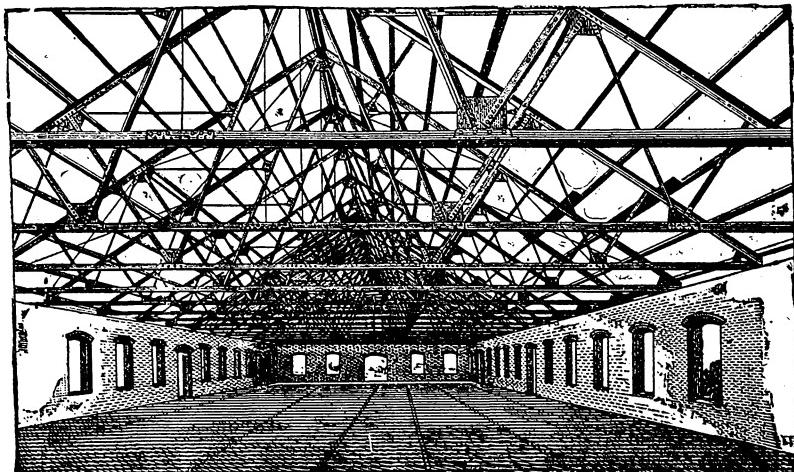
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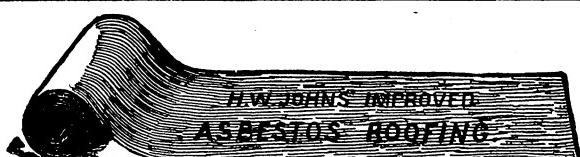


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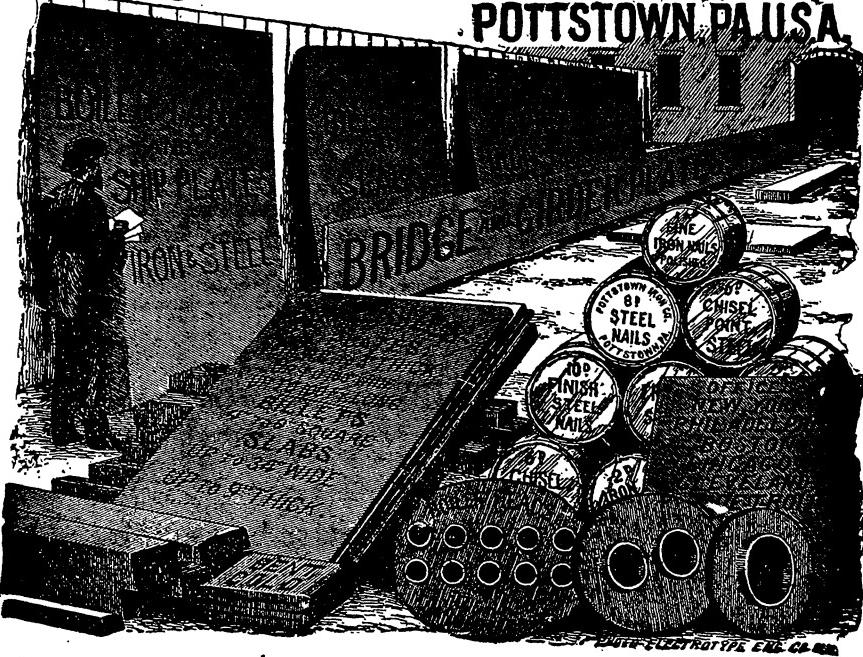
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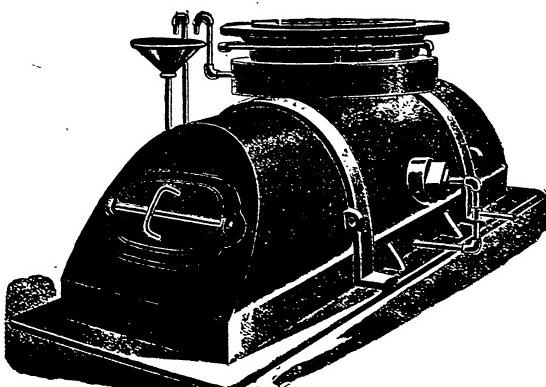
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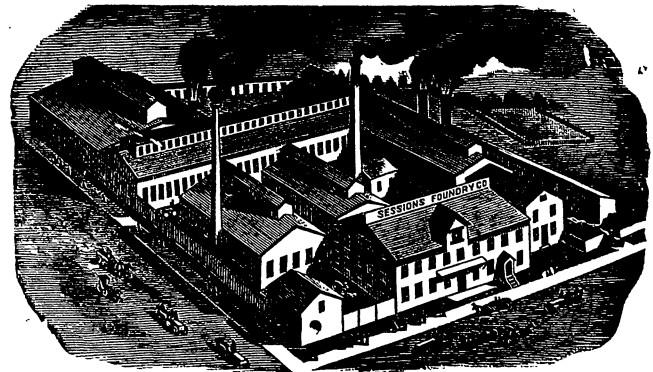
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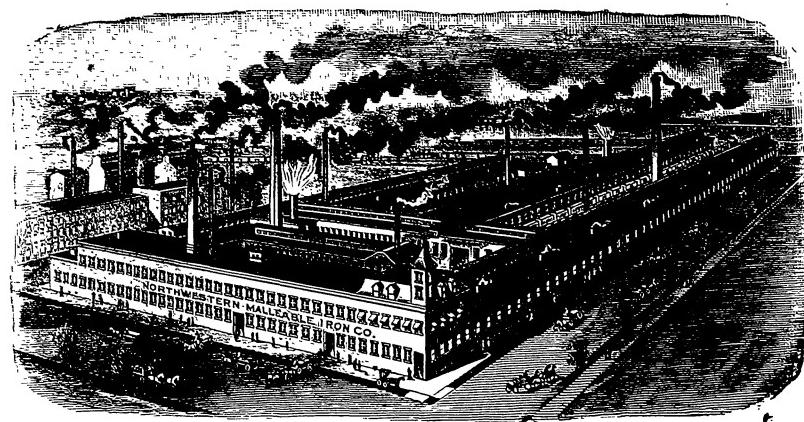
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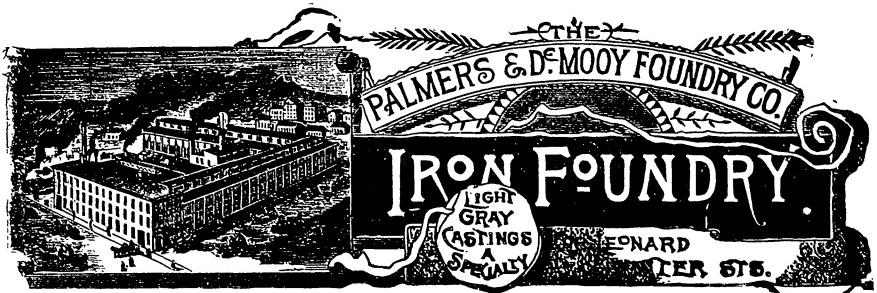
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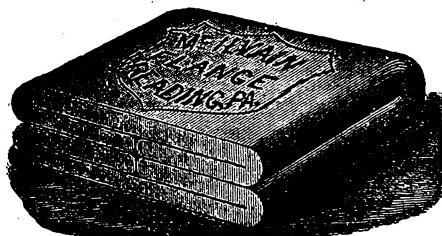
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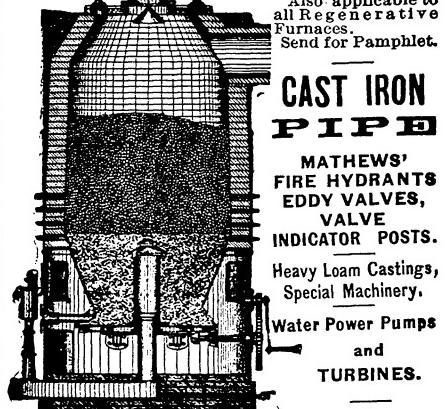
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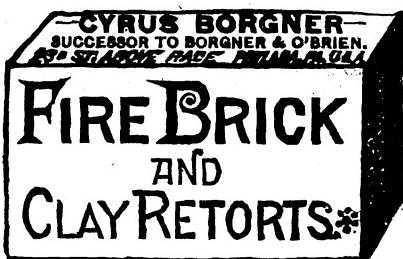
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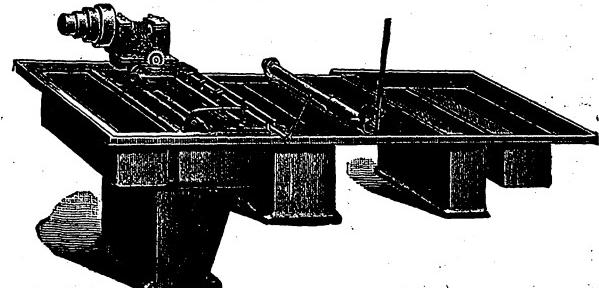
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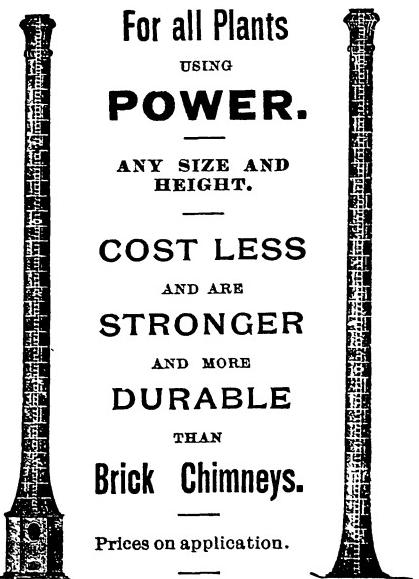
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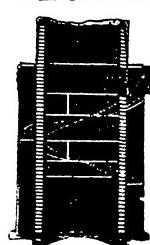
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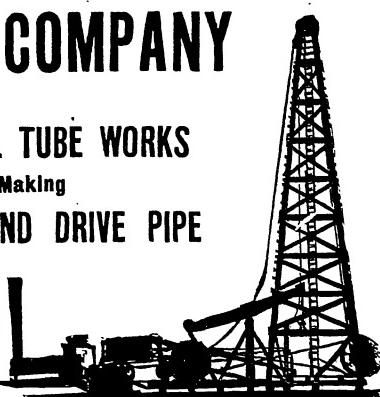
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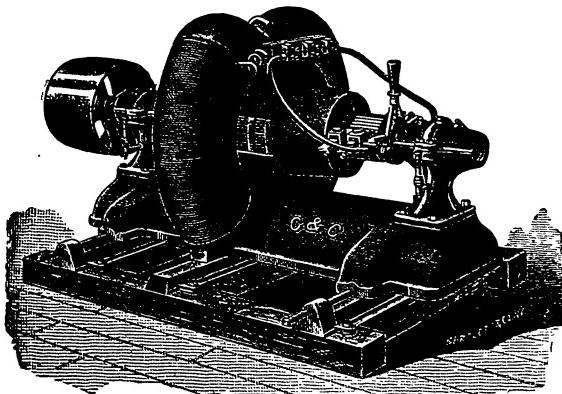
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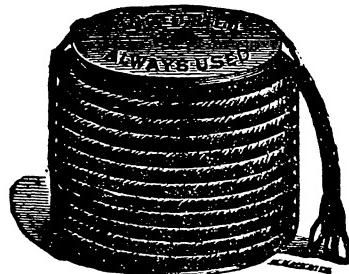
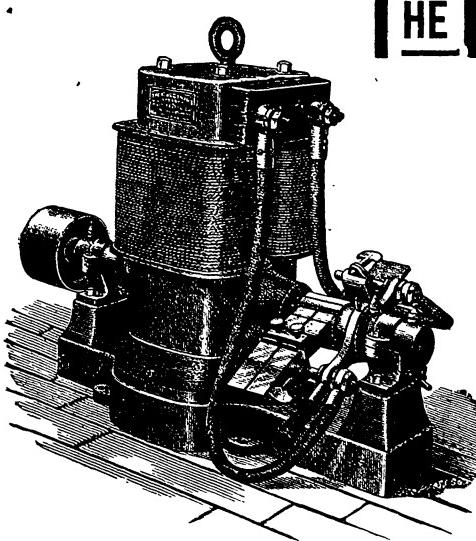
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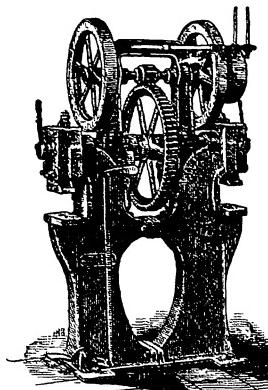
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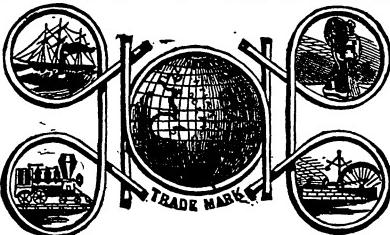
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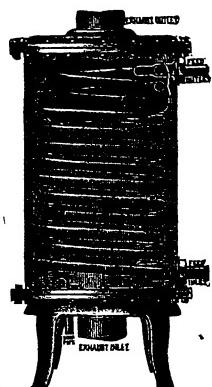
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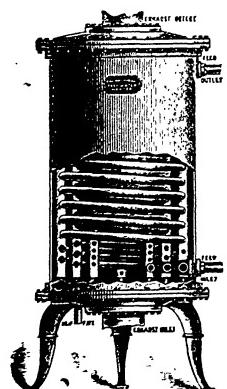
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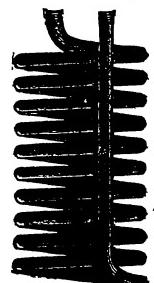
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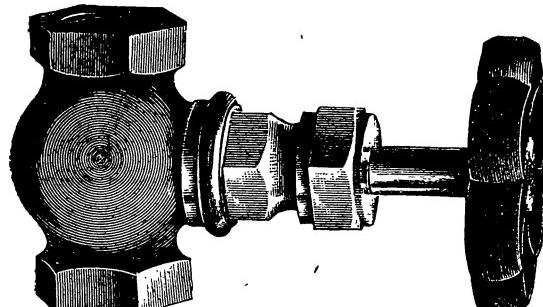


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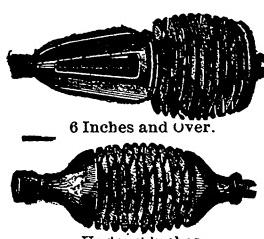
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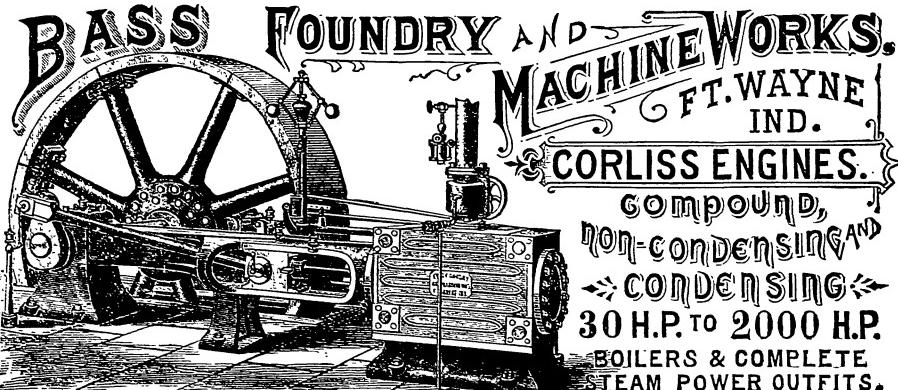
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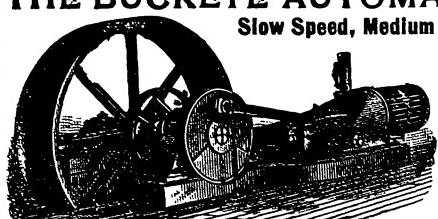
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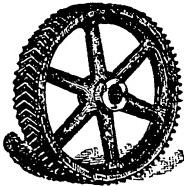
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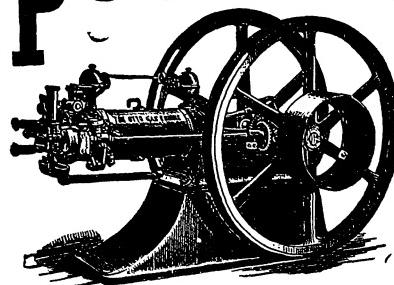
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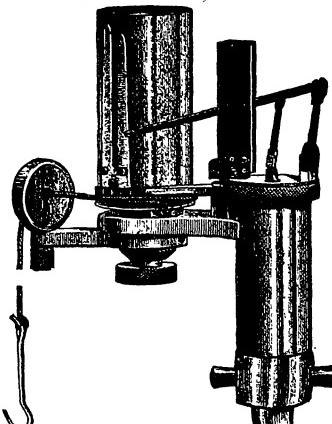
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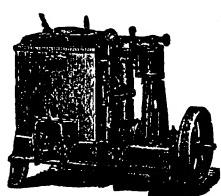
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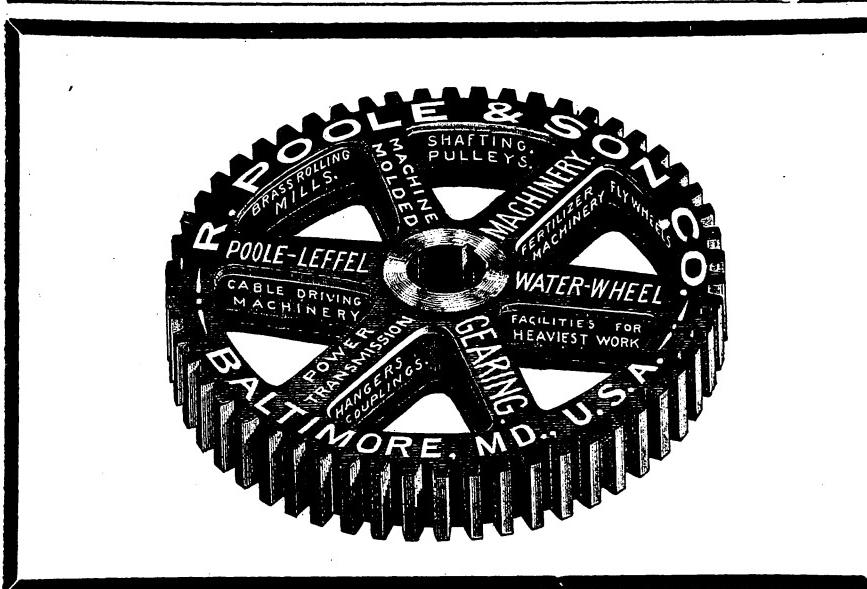
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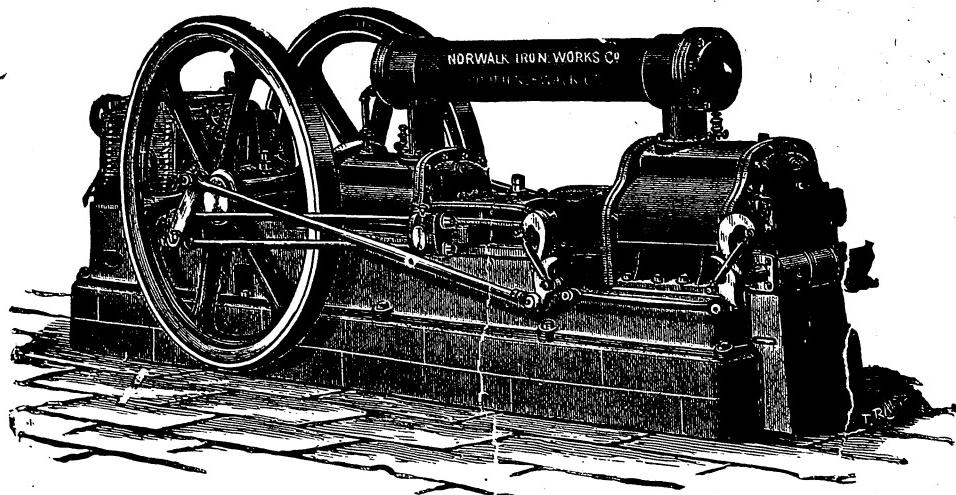
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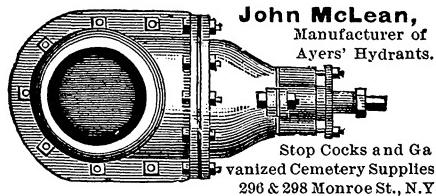
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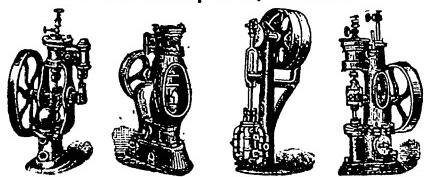


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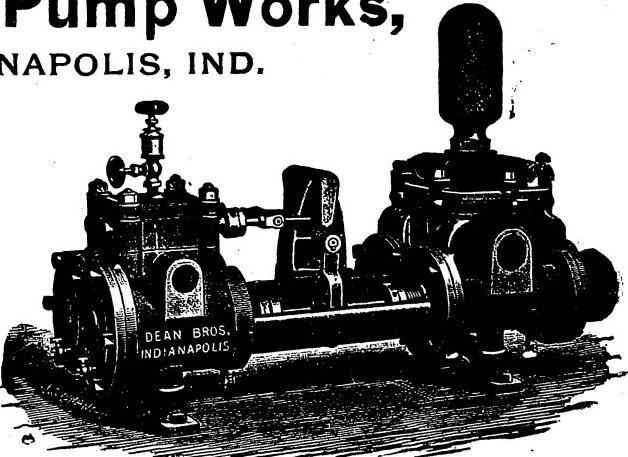
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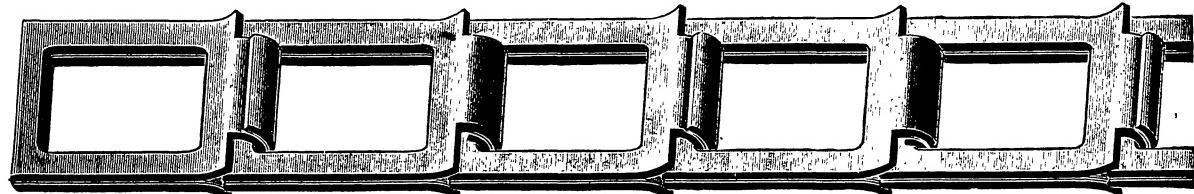
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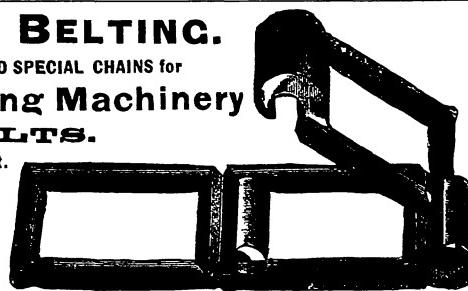
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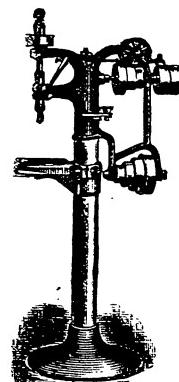
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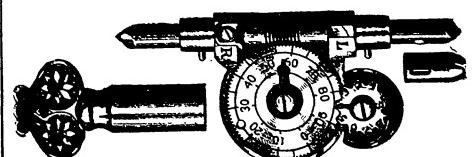
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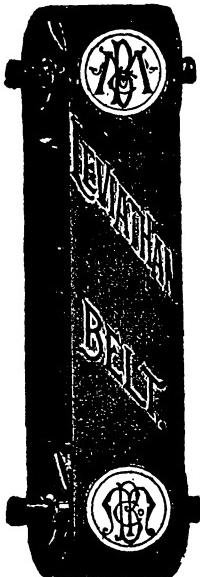
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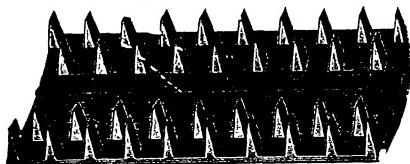
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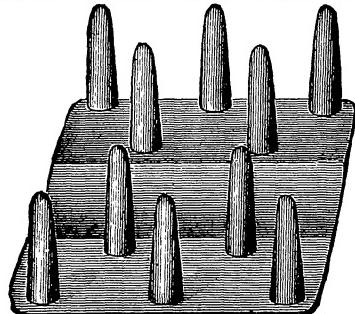


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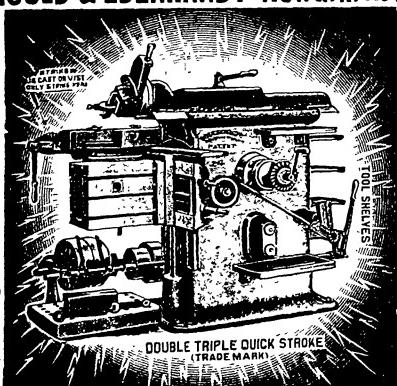


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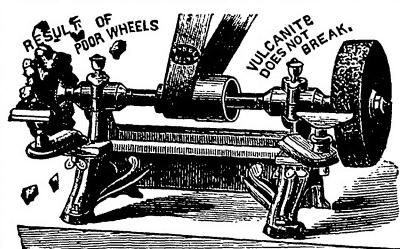
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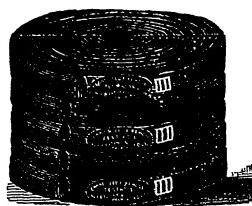
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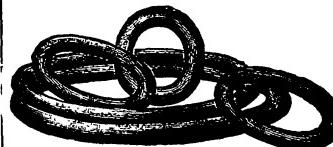
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DENVER, 1601-1611 17th St.  
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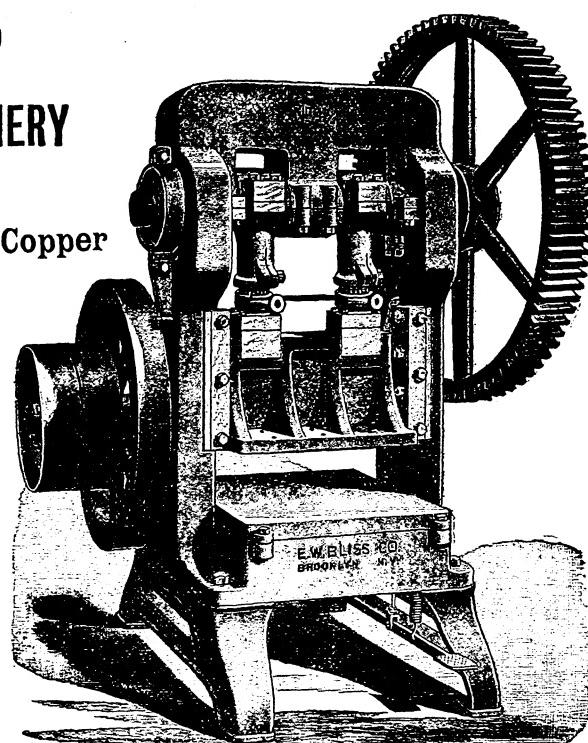
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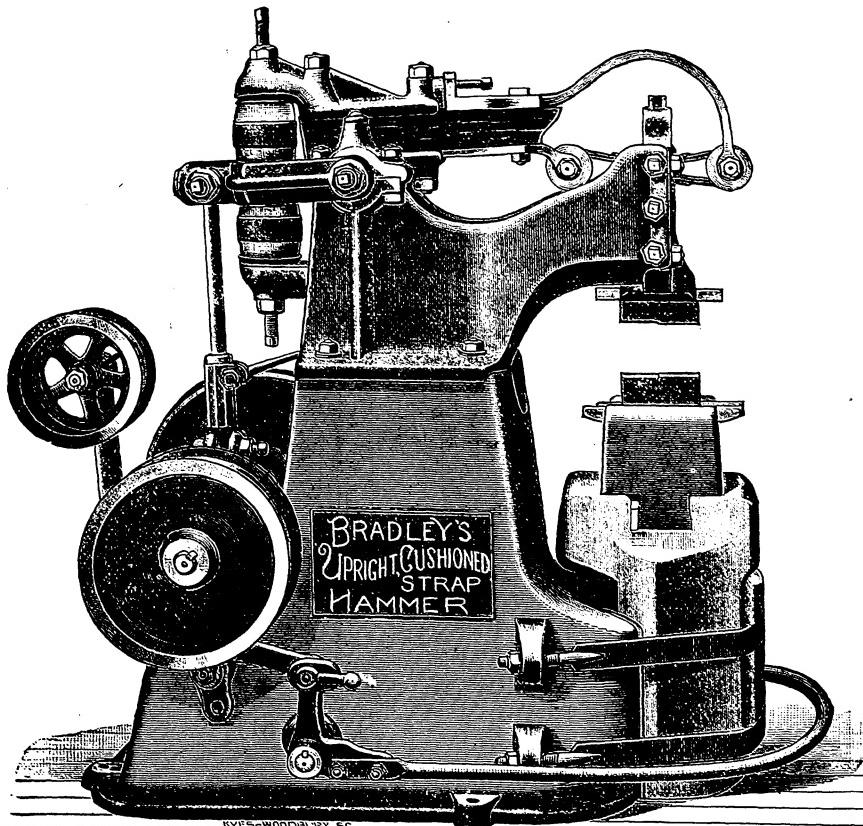
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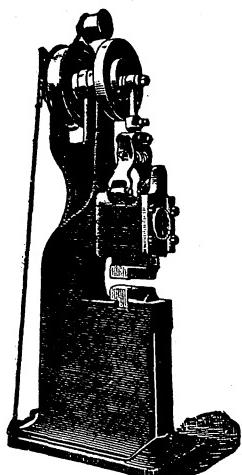
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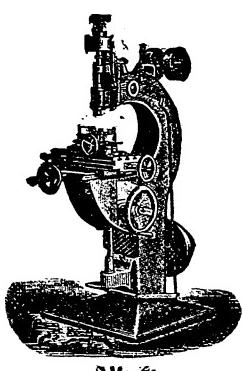
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A large variety of work can be done with this Hammer, and by using suitable dies, work can be turned out in large quantities that is uniform in size and shape, which is an important item in finishing up work; as, for instance, carriage work, where large numbers of the same pieces are wanted, and can be finished by the Hammer.

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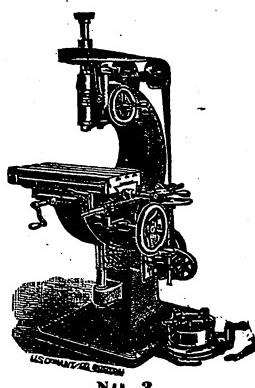
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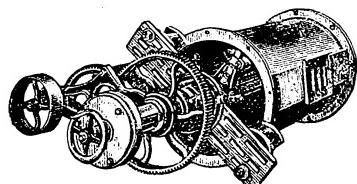
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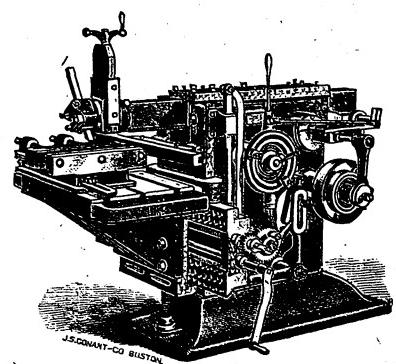
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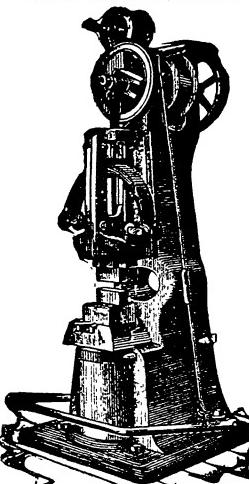
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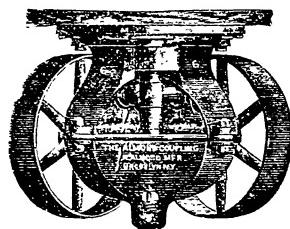
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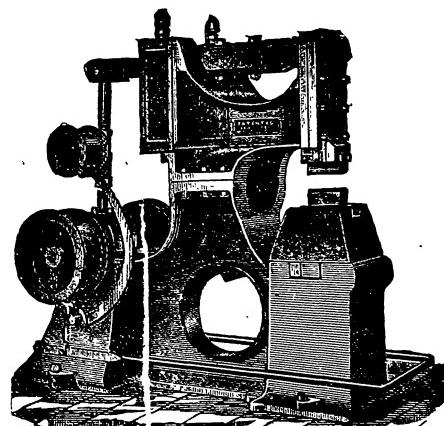
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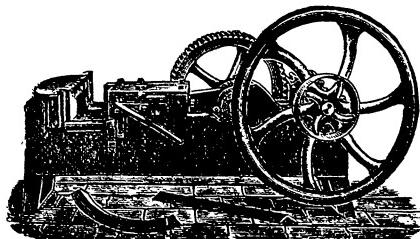


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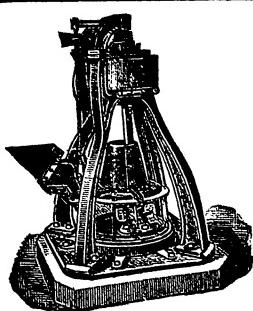


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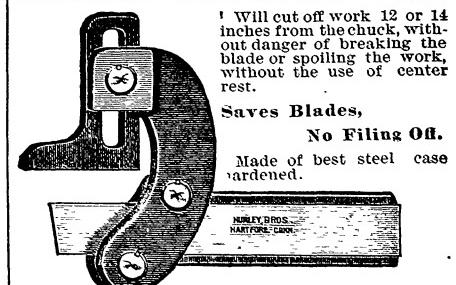
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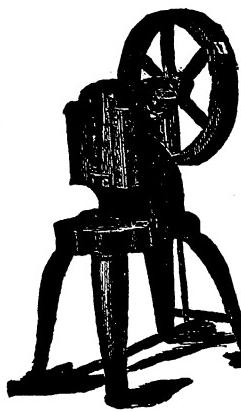
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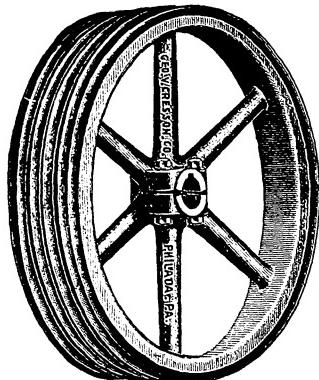
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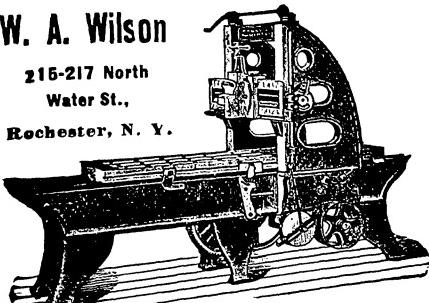


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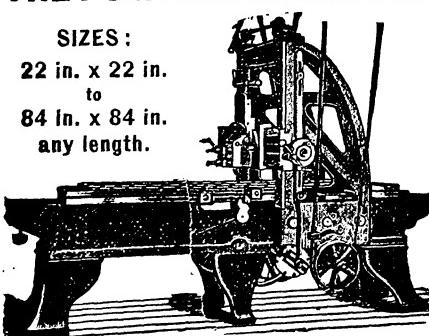
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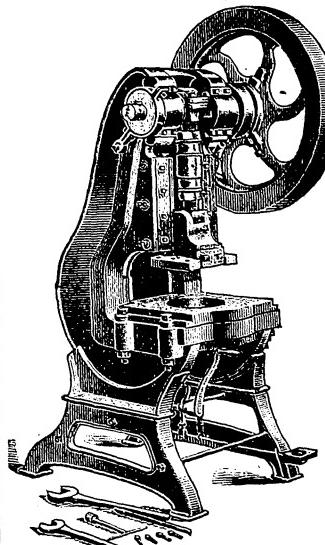
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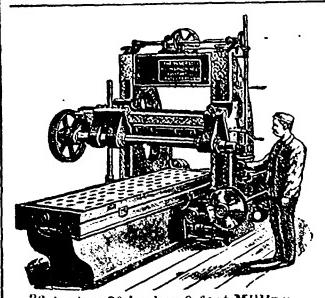


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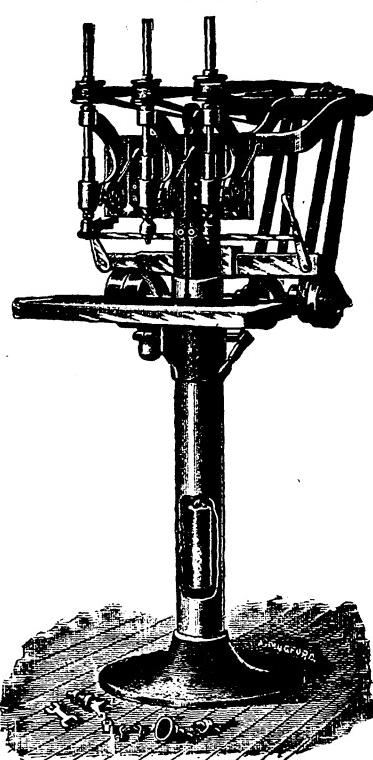
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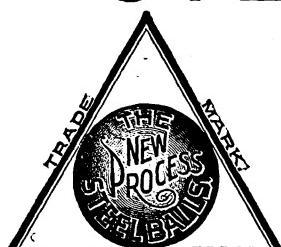
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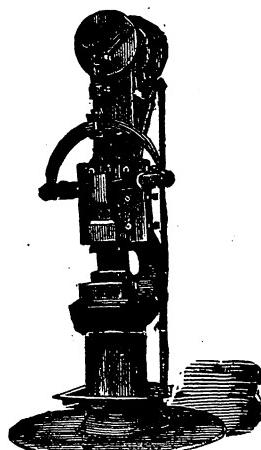
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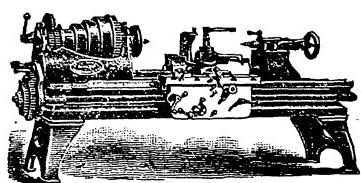
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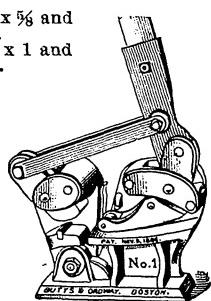
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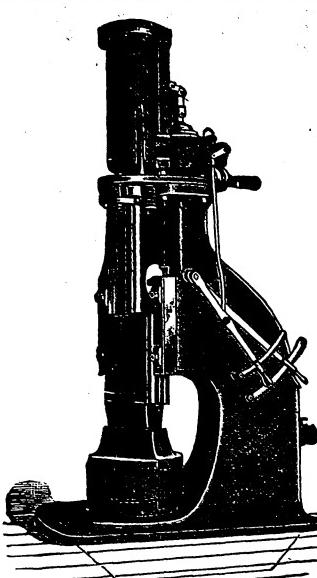


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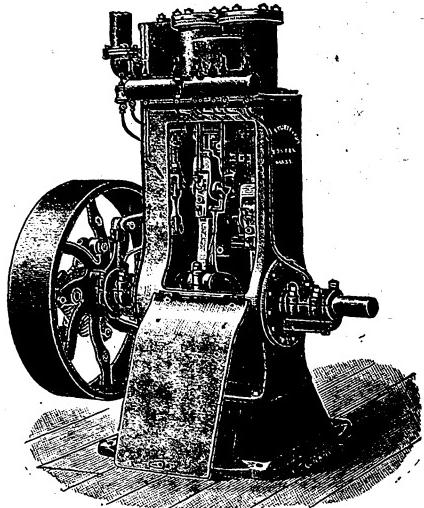
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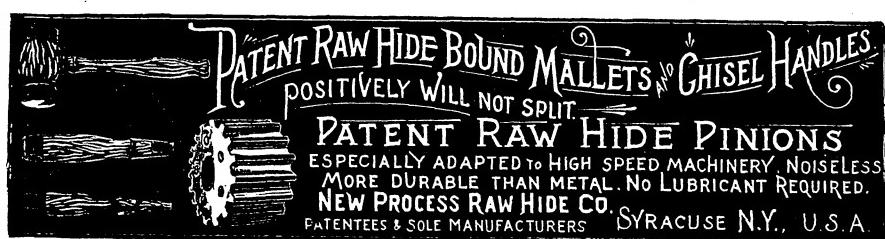
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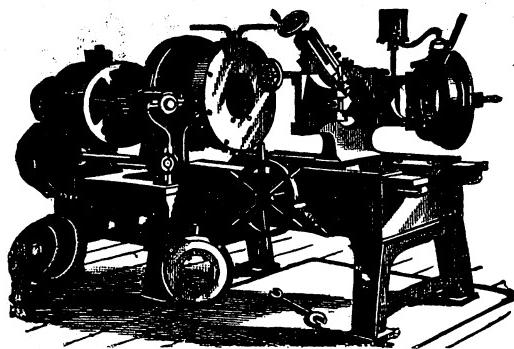
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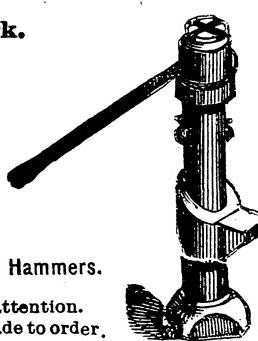
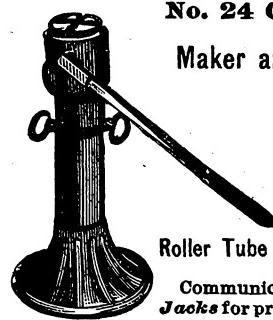
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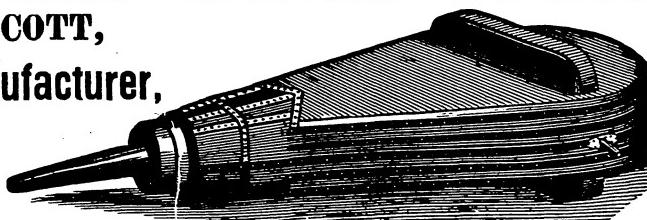


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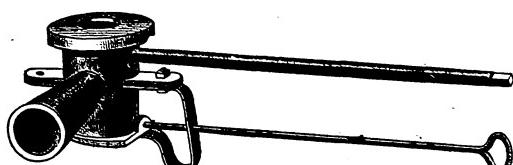


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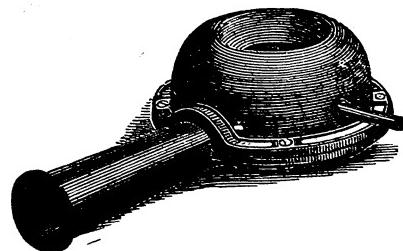
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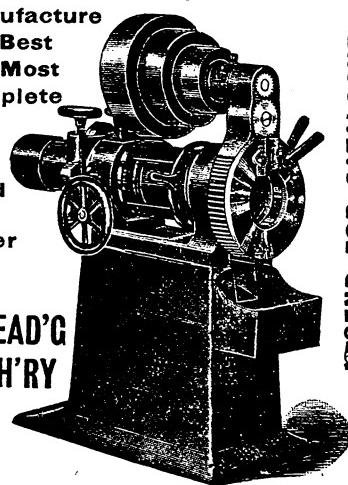
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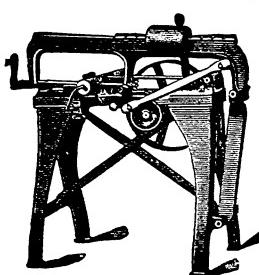
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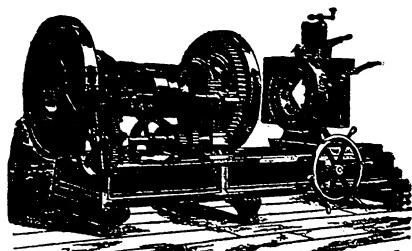


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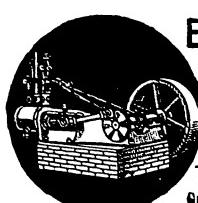
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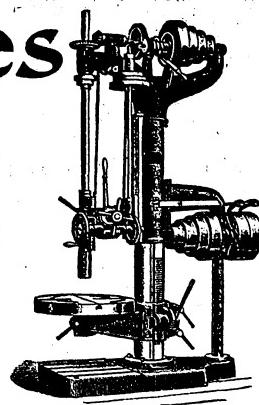
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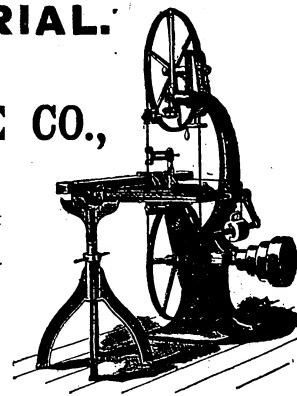
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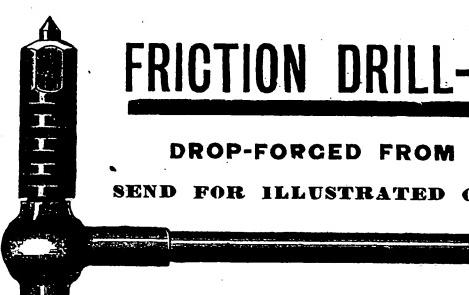
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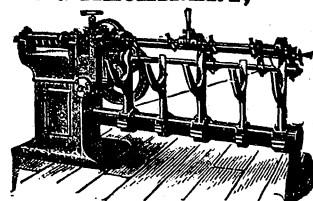
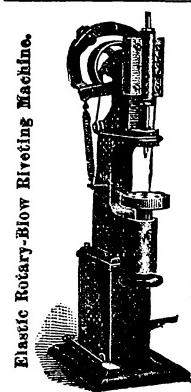
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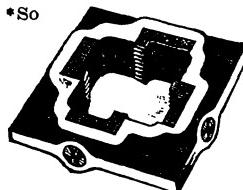
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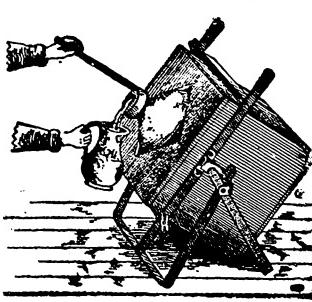
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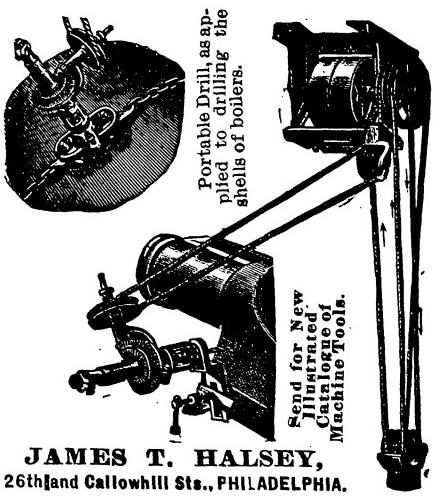
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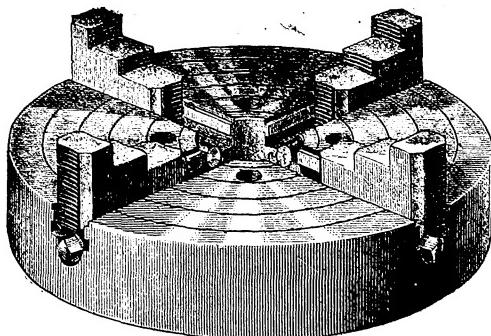
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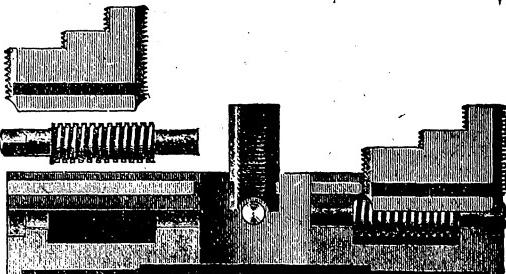
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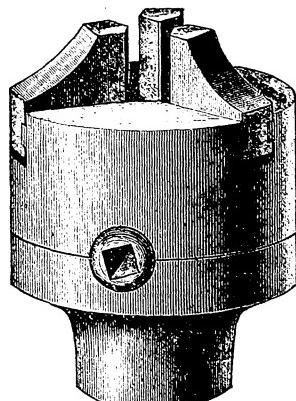
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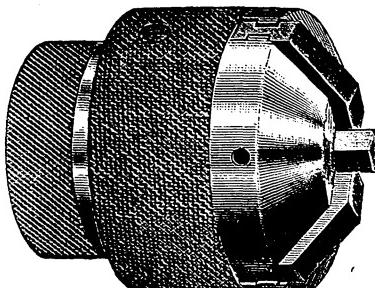
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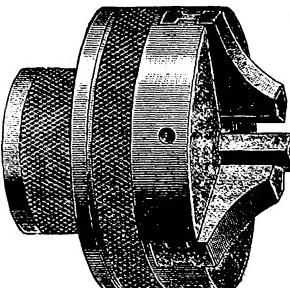
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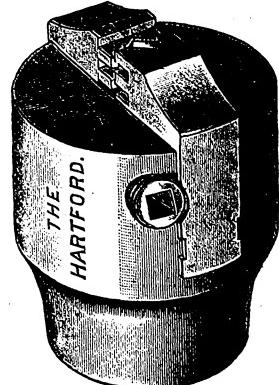
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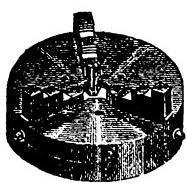
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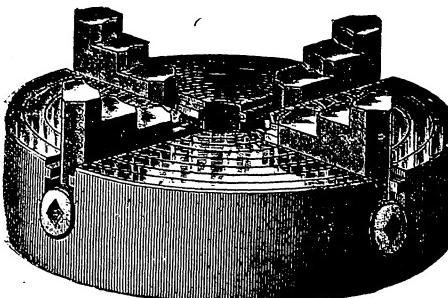
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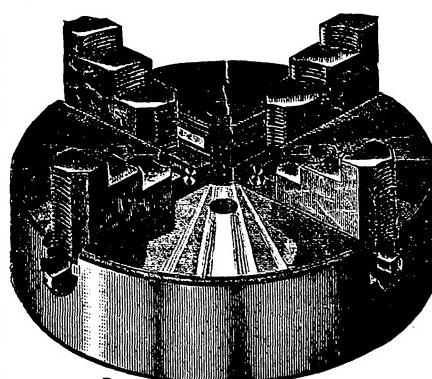
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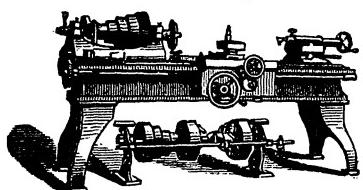
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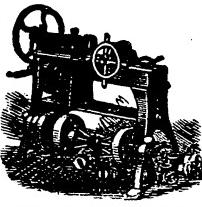


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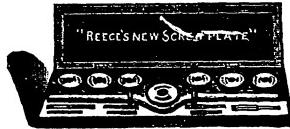
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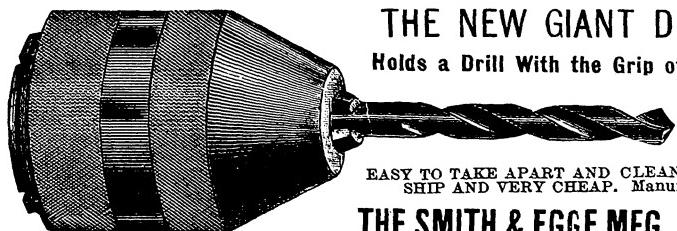


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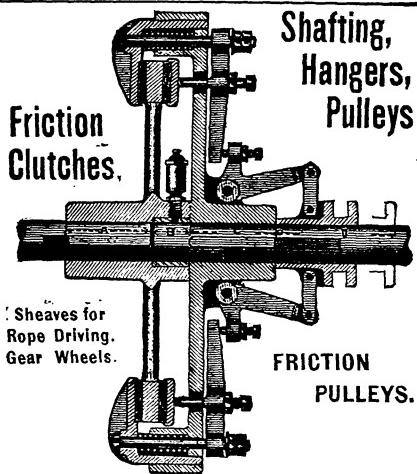
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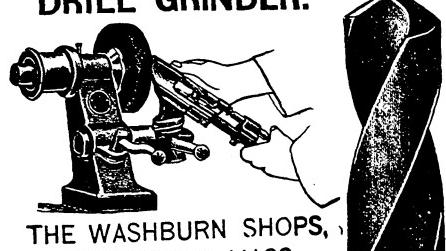
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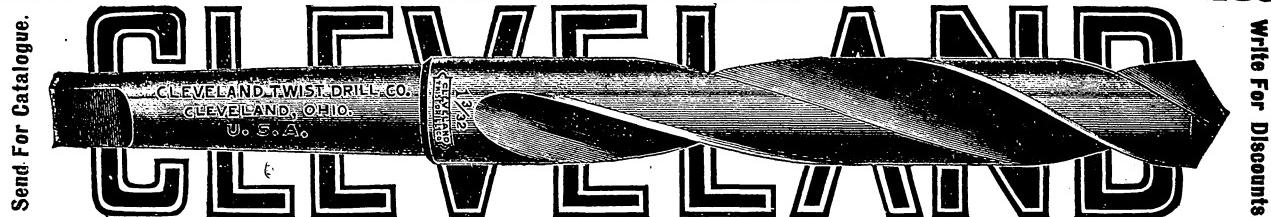
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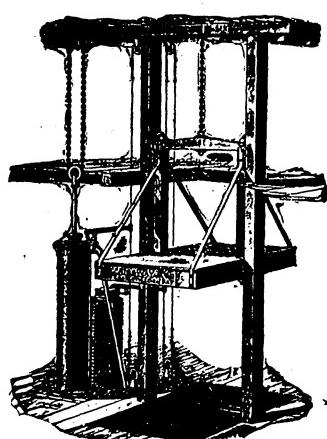
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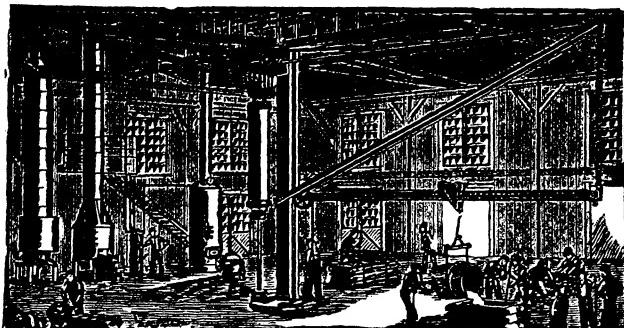
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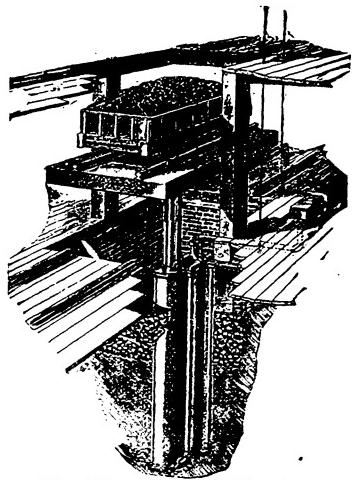
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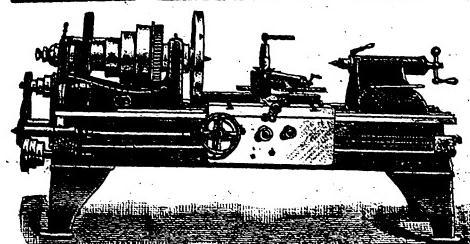
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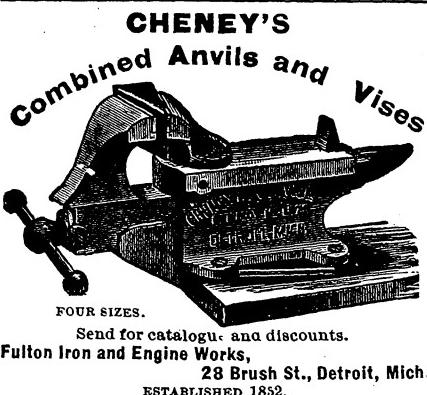
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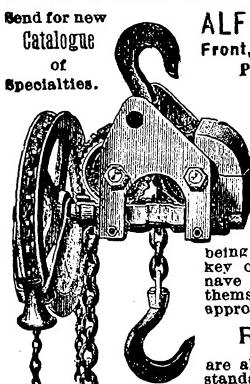
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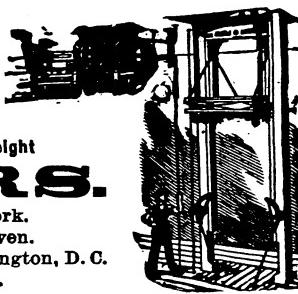
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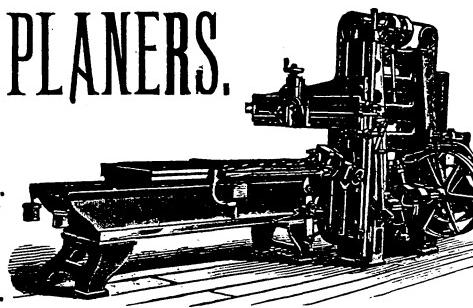
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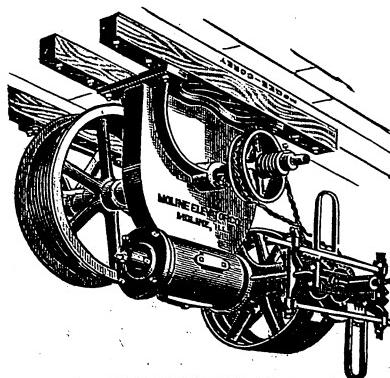
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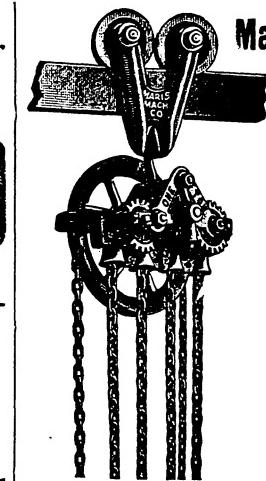
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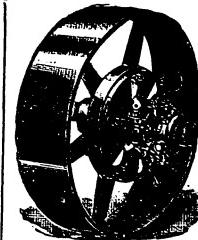
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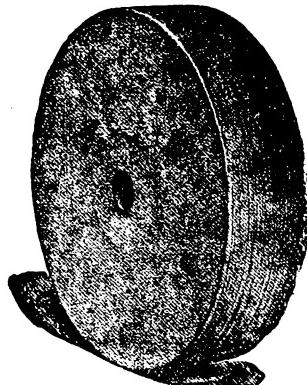
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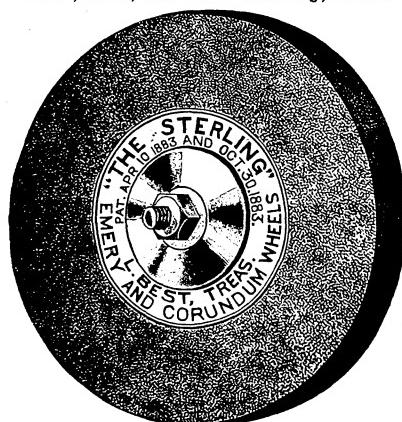
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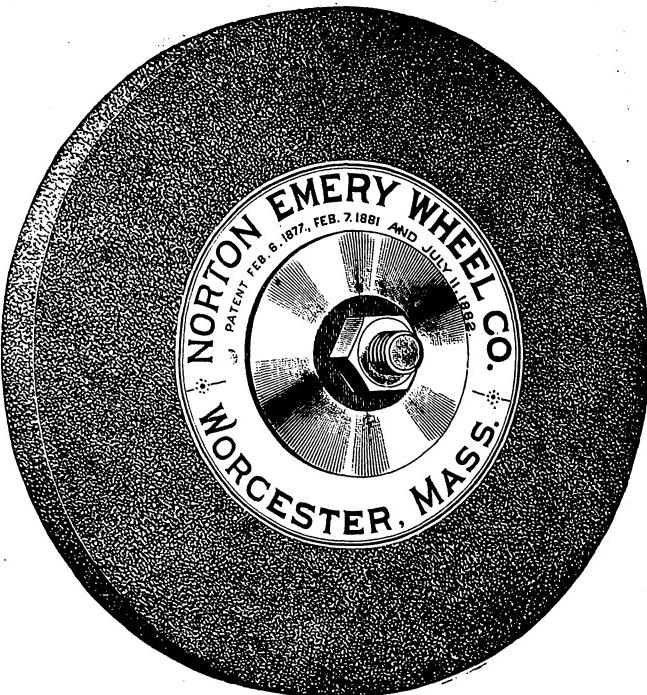
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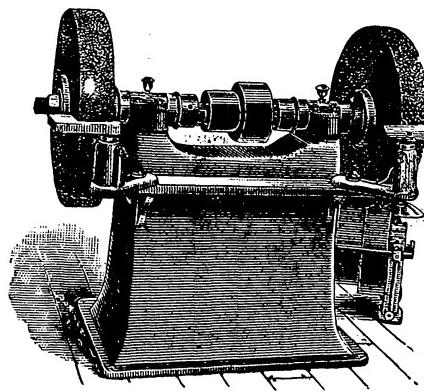
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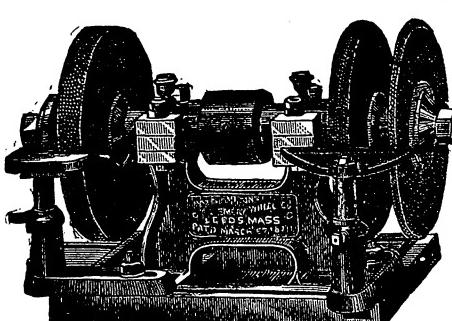
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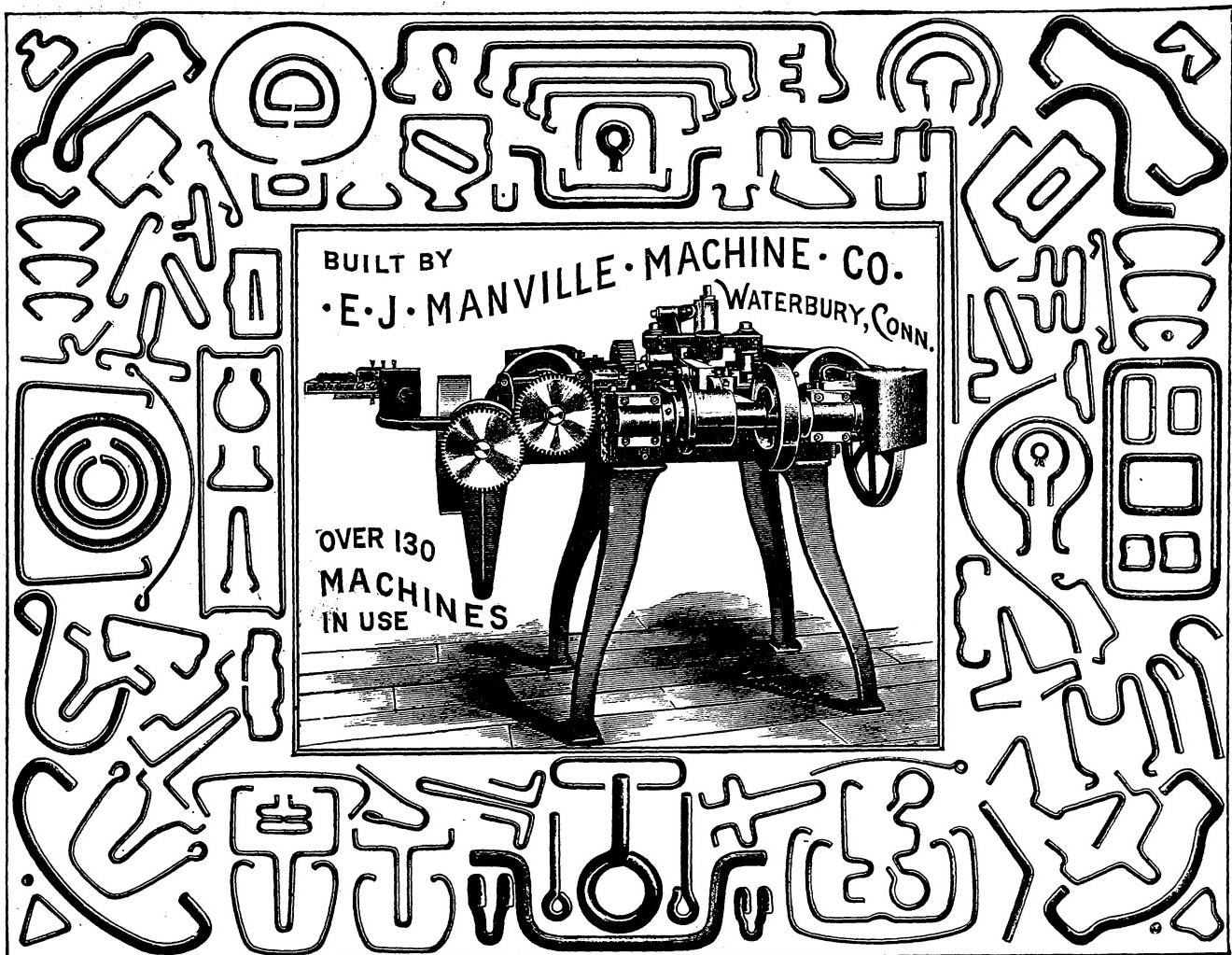
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And when you have visited the  
**CRADLE OF LIBERTY**  
 AND THE  
**GRAVE OF FRANKLIN,**

both of which are to be seen in the  
**QUAKER CITY,**

Come round to our office, within three blocks of the above attractions, and let us have a friendly talk about machinery.

We are Manufacturers' Special Agents, and can save you money on any machinery purchase

**For Motive Power,  
For Iron Working,  
or for Wood Working,**

And verily, when we have reasoned with you, and you have returned to your several homes, you will say each unto his wife, "My trip hath not been unprofitable."

**Pennsylvania Machine Co., Ltd.,**

29 and 31 N. SEVENTH ST.,

**PHILADELPHIA, PA.**

## FOR SALE—SECOND-HAND.

8 Upright Corliss Boilers, 150 H.-P. each.  
 1 Locomotive Fire Box Boiler, 50 H.-P.  
 1 16 x 36 in. Slide Valve Engine.  
 1 14 x 42 Green Engine.  
 1 16 x 42 Babco & Wilcox.

Large assortment of Knowles, Blake and Worthington Steam Pumps. Write for prices and full description to

D. B. CRUICKSHANK,  
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**National No. 3 Double  
Bolt Cutter.**

Capacity up to 1½ in. with one head, and up to 1 in. with both heads. Complete with Dies, Pump and C. Shaft. In good order.

Will be sold very low if ordered at once.

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 14 Dey St., New York.

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Must be Sold and  
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16 in. x 30 in. Horizontal Engine.  
18 in. x 36 in. Horizontal Engine.  
24 in. x 36 in. Horizontal Engine.  
19½ in. x 48 in. Beam Engine, with  
Knowles Condenser.

Write us for what you want.

**LOVEGROVE & CO.,**

Third and Quarry Sts., Philadelphia, Pa.

## SECOND-HAND MACHINERY.

One Pond Machine Tool Co. Iron Planer, 40 in. x 40 in. x 24 ft., with two heads. In fine order.  
One Belden 100-lb. Upright Power Hammer.  
One 60-lb. Bradley Herve Hammer.  
One American Tool Co. No. 2 Cabinet Turret Lathe, with slide rest. In fine order.  
One Pratt & Whitney 36-in. Gap Chucking Lathe.  
One Pratt & Whitney No. 3 Lincoln Miller. In fine order.  
One Iron Planer, 52 in. x 44 in. x 12 ft., with two (2) heads.  
Send for circular of Second-hand Machinery in stock.

**HILL, CLARKE & CO.,**  
156 Oliver St., Boston, Mass.  
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The entire equipment of the United Electric Traction Company of Marion, N. J., comprising:

31 Engine Lathes, from 14 in. to 48 in. swing.  
15 Hand Lathes, from 10 in. to 20 in. swing.  
5 Planers, from 24 in. x 5 ft. to 32 in. x 12 ft.  
6 Shapers, all sizes up to 32 in. stroke.  
13 Drill Presses, all sizes up to 32 in. swing.  
8 Milling Machines, Plain and Universal.  
2 Brown & Sharpe Screw Machines.  
1 Large Newton Slotting Machine.  
1 Large Radial Drill Press.  
3 Gould & Eberhardt Automatic Gear Cutters, 36 in., 48 in. and 60 in.  
1 Betta Machine Co. Large Horizontal Boring Mill.  
1 No. 2 Diamond Universal Grinding Machine.  
2 Large Bliss Power Presses.  
Also Tool Grinders, Die Sinkers, Tapping Machines, Bolt Cutters, and Large Patters and Blacksmith Shop Equipments.

These tools are all in A1 condition and of the very best makes in this country. They will be sold at remarkably low prices, and must be disposed of at once. Call at our salesroom and inspect them, or write for complete descriptive circular and price-list.

**THE GARVIN MACHINE CO.,**  
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One "Washoe" Press for making Axe Polls Pick and Mattock Eyes, weighing about 25,000 lbs., in good condition.

DANIEL L. HEISKELL,  
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## SNAPS.

Lot Sellers Bolt Cutters; cheap to close out.  
Lot Eclipse Pipe Cutters; low priced and efficient.  
Lot Steam Pumps, single and duplex; standard makes; perfect order.  
80 H.-P. Upright Boiler; a rare bargain.  
250 H.-P. Vertical Corliss Engine; as good as new.  
And hosts of other things.

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## FOR SALE. SECOND-HAND PUMPS

Smith-Vaile Compound Duplex, 14-20 x 15 x 15. Worthington 10-16 x 10½ x 10. Blake 7-16 x 7 x 15. Guild & Garrison, 24 x 24 x 24. Davidson, 24 x 12 x 12. Blake, 24 x 18 x 24. Davidson, 14 x 8½ x 14. Cameron, 14 x 9 x 18. Worthington Duplex, 14 x 8½ x 10. Deane, 14 x 7 x 14. Davidson, 12 x 10 x 12. Guild & Garrison, 12 x 7 x 12. Niagara, 12 x 7 x 12. Worthington Duplex, 10 x 6 x 10. Deane Duplex, 9 x 5½ x 10. Send for list of machinery on hand.

**MARVIN BRIGGS,**  
12 Broadway, New York.

## SECOND-HAND MACHINERY.

Boring Mill, 10 ft. 4 in. swing, 56 in. under cross rail, table 7 ft. 6 in. in diameter.  
Boring Mill, 8 ft. 4 in. swing, 48 in. under cross rail, table 6 ft. 6 in. in diameter, two heads on cross rail.  
76-in. Planer, 13 ft. long; heavy and powerful.  
48-in. Car Wheel Borer.  
Axle Lathe.

Write for photographs and further particulars.

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THE FOLLOWING Second-hand Engines, Boilers and Machinery of the best modern make, guaranteed in perfect condition:  
One 100 H.-P. Corliss engine. One 60 H.-P. automatic Atlas engine. One 10 to 100 H.-P. horizontal slide valve engines. 8 to 60 H.-P. vertical engines. 4 to 10 H.-P. yacht engines. 2 to 10 H.-P. Baxter engines and boilers. One 4 H.-P. Otto gas engine. 6 to 10 H.-P. horizontal engines with boilers. One 100 H.-P. vertical and horizontal boilers. One 75 H.-P. locomotive boiler. Several steam pumps of different sizes. One each 36 in. x 10 ft., 36 in. x 9 ft., 24 in. x 12 ft. Planers. One large Bement Milling Machine. 20 in. x 8 ft., 15 in. x 7 ft., 13 in. x 6 ft., 13 in. x 6 ft. Blair Lathes, all new, bargains. Two 20 in. x 6 ft. turning lathes. One 6 in. shape. One 38 in. x 8 ft. and one 30 in. x 7 ft. planer. Two grinders for twist drills. Large Springfield tool grinder. 16-in. jointer. 6-in. air compressor. No. 3 and 4 Bement milling machine. One 30 in. x 10 ft. and 18 in. x 11 ft. screw Lathes. Two large Presses. Boiler rolls. Punch and shears. Radial drill. 25-lb. Bradley and 10-lb. Hotchkiss hammer. New ammonia compressor and engine for ice making, 15 to 20 tons capacity. 2½-in. exhaust heads. 1 large stone crusher. 1 road roller. Large stock of new engines, boilers, machinists' tools and supplies. Catalogues. FRANK TOOMEY, 131 North 3d St., Phila.

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1 Hendey Shaper, 15 in. stroke, imp. vice; new.  
1 14 x 6 Screw Cutting Engine Lathe; new.  
4 H.-P. Comb. Engine and Boiler. Fine condition.  
Hendey Cutting-off Machine. New.  
1 3-Spindle Garvin Drill Press, used 1 month.  
30 x 15 Pond Lathe. Good condition.  
72 x 72 x 20 Planer 2 Cross Heads.  
1 25 H.-P. Westinghouse Automatic Engine.  
1 25 H.-P. Erie City Boiler; good condition.  
Also variety of Engines, Boiler Pumps, &c.  
And other machinery, new and second hand. Write for prices.  
**Machinists' Supply Company,**  
39, 41 and 43 Central Ave., Rochester, N. Y.

**FOR SALE.**  
One Stationary Double Cylinder Steam Crane, capacity 5 tons.  
One Bookwalter Steel Converter, complete.  
**CHICAGO HORSE SHOE CO.,** E. Chicago Ind.

Iron Tanks, Hydraulic Press, Corliss and other Automatic Engines, Slide Valve Engines, Boilers, Steam Pumps, etc., etc.

TANKS.—Rendering Tanks, Square Tanks, Round Tanks, and Pans; from Soap Works, cheap before removal.

**HYDRAULIC PRESS**, 600 to 800 tons, with R. Hoe & Co. Air Pump for same.

**CORLISS ENGINES**, 30 x 72, 30 x 60, 26 x 48, 23 x 36, 10 x 24, and other sizes; also other Automatic and Slide Valve Engines.

**HORIZONTAL BOILERS**, 5½ x 16, 5½ x 14, 5½ x 10, 5 x 18, 4½ x 12, and others. Brennan Crusher, 8 x 25. Bogardus Mill. Ingersoll Rock Drill. Woodward Double Fire Pump, 1000 gallons. Worthington Duplex Pump, 25 x 12 x 24. Four-side Wood Planer and Matcher. Also assortment of Steam Pumps.

Send for catalogue.

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**BAKER BLOWERS**, Nos. 1, 3, 4, 4½, 5, 6 and 7. **ROOT BLOWERS**, Nos. 1, 2, 3, 4, 5, 6 and 7. Sturtevant Blowers, Nos. 5, 7 and 8.

2 12 and 1 15 H.-P. Horizontal Boilers; new, very cheap. 10 in. x 7 in. Blake Crusher; equal value. Corliss Engine, band wheel in halves, 12 ft. x 24 in. x 9 in. hole. 1 large Somer & Scherzer Press. 1 Niagara Fly Wheel Pump, 14 in. x 7 in. x 10 in., brass lined. Purchasers of machinery and those who have it for sale will do well to correspond with C. R. BIGELOW, Machinery Expert and Appraiser, 45 Dey St., New York City.

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We have for sale cheap:  
**One 300 H.-P. Gummer Horizontal Engine, complete.**  
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Must be moved at once. Address  
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**MACHINE TOOLS,**  
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Hendey's "Morton" Screw Cutting Lathes. Cut 12 threads without changing any gears. 36 speeds for the side feed. Garvin Screw Machines. Dwight Slatte Sensitive Drills. A line of second-hand Tools, also small Electric Fan Motors.

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Special lots; (also second-hand) Supplies, Machinery, &c., bought, sold and exchanged. If you wish to buy or sell, write me.

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## For Sale, Cheap LOCOMOTIVES AND CARS.

Standard and narrow gauge boarding, box, coal, flat, refrigerator and passenger Cars. Also large quantities of relaying and scrap rails, car wheels and scrap, pig iron, muck bars, &c.

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For sale at half price, if sold at once, one 350 horse-power and one 200 horse-power Automatic Cut-off Engines. Also one 70 horse-power Trottling Engine. These engines are guaranteed; they are finished at the shops and ready for immediate delivery. Address

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I offer 3 20 in. x 24 in. Improved Straight-line **Ingersoll-Sergeant Air Compressors**, built in 1890, and used only seven months at St. Clair Tunnel. Ready for delivery and in first-class condition.

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NEW AND SECOND-HAND, FOR SALE.

**LATHES.**

80 in. x 18 $\frac{1}{2}$ ft., Geared Face Plate.	25 in. x 12, 16, 20 and 24 ft.
60 in. x 45 ft., " " Double Lathe, complete.	22 in. x 10 ft.
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48 in. x 27 ft., cheap.	20 in. x 5, 6, 8 and 10 ft.
86 in. x 18 ft., Geared Face Plate.	18 in. x 4, 7 and 8 ft.
88 in. x 27 ft.	17 in. x 6 and 7 ft.
80 in. x 28 ft., Shafting Lathe, Pond.	16 in. x 6 ft.
28 in. x 22 ft., cheap	14 in. x 6 ft.
24 in. x 10 ft., "	12 in. x 6 ft.

<b>PLANERS, SHAPERS, SLOTTERS.</b>	
5 ft. x 22 in.	12 ft. x 60 in., 2/22 ft. x 72 in., 4 heads
4 & 5 ft. x 24 in.	16 ft. x 42 in., 8, 12, 15, 16 in. stroke
8 ft. x 24 in.	16 $\frac{1}{4}$ ft. x 84 in., Shapers.
5 ft. x 25 in.	3 heads.
7 ft. x 28 in.	22 ft. x 62 in., Shapers.
8 ft. x 31 in.	22 ft. x 72 in., 2, 8, 13 in. stroke Slotters.

Lincoln Millers Gang Drills, Screw Machines. Steam Hammers, 100, 1000 and 3000 lbs. Drill Presses, 20, 21, 22, 28, 30, 34 in., Upright. Gear Molding Machine, Scott's Pat., 3 different sizes. Corliss Engines, 12 in. x 24 in. and 16 in. x 42 in. Brown Engine, 16 in. x 48 in. Whitehill, 11 in. x 18 in. Vertical Engine, 13 in. x 16 in., N. Y. Safety Steam Power Co. Send for latest list.

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- 43 Engines, 26 inch diameter and smaller.  
16 Hoisting Engines.  
11 Pair of Rail, Bar, Sheet and Clipping Shears  
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4 Ore Grinding Pans.

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Four second-hand 75 H.-P. Double-Deck Boilers, with all fittings and fixtures. In first-class condition. Cheap. Two 2-flue Boilers, 48 in. diam. x 82 ft. long, in prime condition. Cheap. One 16 x 22 Side Crank Engine. One 16 x 36 Side Crank Engine. Full line of new and second-hand Boilers and Engines always on hand. H. M. Scipio & Co., 3d and Arch Sts., Philadelphia, Pa.

**Relaying Rails and Narrow-Gauge Equipment and large quantities of Light New Steel Tee Rails.**

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100 tons of "I" Beams, new, 7 to 15 in. and 15 to 28 ft. long.

I am in the market at all times to buy or sell anything in the way of second-hand Equipment, Rails and Scrap. In answering, kindly mention paper.

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**STEAM PUMPS**  
**FOR SALE.**

One 6 in. x 4 in. x 6 in. Worthington Pump. One 6 in. x 4 in. x 6 in. Smith Vaile Pump. One 5 in. x 4 in. x 6 in. Deane Tank Pump. One 6 x 3 $\frac{1}{2}$  x 6 Knowles Pump, and Hooker Pumps for every duty.

Address  
**HOOKER-COLVILLE STEAM PUMP CO.,**  
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Machine or Repair Shop with established business; no opposition. Will sell stock, tools and machinery separate or with building. Building is three stories, 60 x 180 ft., brick. Shop is well equipped with first-class machinery, wood and iron lathes, saws, drills, emery wheels, steam hammer and all machinery usually found in first-class shop. Engine used to run shop pumps water for city. Will lease or sell. Owner has other business and must retire. Call or address C. W. WAINMAN, Rushville, Ill.

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**Pair of Mine Hoisting Engines,**  
100 H.-P., double geared, very strongly built.

**Locomotive Boilers,**  
all sizes, fitted to suit customers.

Full line of Engines and Pumps, guaranteed first class. It will pay you to see our stock before buying

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Side and Center Bearing.

Fit to relay. Apply to  
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2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 40 and 42 in. diameter. Round and Square Iron Tanks. Book Binding Machinery. Smoke Stacks, light and heavy, all sizes. Large lot Cast and Wrought Scrap Iron on hand. Also Dealers in Metals.

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**CRANK and GEARED SHAPERS.**

Write us for Bargains.

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**FOR SALE.**

25 lb. section iron T Rails in good condition for relaying.

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**WANTED.**

Foundry Contracts to be completed before September 1st. Capacity of works, 9 tons per day. Can make close prices and prompt shipment.

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**FOR SALE.**

Four 250 horse-power Hazelton Tripod Boiler Frames, in good condition. Address E. C. PRICE, South Omaha, Nebraska.

**A BARGAIN.**

Must be sold and removed.

For sale, one 10-inch Drop Press; several Crosby Power and Hand Stampers, Machines, with some 60 different dies and a large number of other machinery and tools used in manufacturing lanterns, railroad tubular, fruit cans, wainscotting and ceiling. All new machines, not run over 60 days; at a low figure for immediate disposal. Have also for sale second-hand Boilers, Engines (Portable and Stationary) and one 7-inch Houston four-sided Planer and Molder.

**JOHN M. KRAMER & BRO. MACHINE WORKS,**  
Maria Stein, Ohio.

**WANTED.**

One 10 x 10 and also one 10 x 12 or 13 x 12 Furnace Hoisting Engines; either the Otis or Crane type. Address ROANE IRON CO., Rockwood Tenn.

# KOKOMO, INDIANA.

Are you a Manufacturer?

Do you expect to Manufacture?

Is Fuel an item of expense in your line?

If so, come to Kokomo and get free gas for fuel and light for all factory purposes, free land for your factory sites. Shipping facilities the very best, and every point of advantage a business man can ask in a wide-awake, modern city of 15,000 population, in the heart of the great Gas belt of Indiana. Write for catalogue.

**Kokomo Enterprise Co.,**  
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**A 16-inch SHAPER**

Makers: Gould & Eberhardt. Splendid condition; low price; good value.

**A 16 in. x 8 in. Hendey Lathe.**

Used but a short time.

A splendid tool.

A good purchase.

The Scranton Supply and Machinery Co., Scranton, Pa.

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Four Cylinder Boilers good for Stacks, 15 ft. long, 6 ft. diameter. Address "BOILER,"

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**For Sale, Cheap.**

200 tons of 60-pound Second-hand Steel Rails.

Suitable for relaying. F. o. b. cars Buffalo, N. Y. For prices, &c., address J. H. RICHARDSON & CO., Pittsburgh, Pa.

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Nos.  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1, 2, 3 and 6 Root's Pressure Blowers, in A1 order and cheap.

Also 15 horse Upright Engine and Boiler.

COOKE & CO.,

163 and 165 Washington St., New York.

# FOR SALE, CHEAP.

Eight Steam Cranes, 24 Iron Ore Buckets, 24 Trucks and 8 Overhead Dump Cars, all of which have had very little use and are in good condition; can be seen in Cleveland.

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One pair large heavy Plate Steel Pyramid Rolls, 9 in. x 100 in. inside the housings. New and never been used.  
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A valuable Mill Property in first-class condition, on the line of the D. L. & W. and N. J. Central Railroads, containing 14 acres of land, water and steam power, two turbine wheels, one large mill, suitable for axe or machinery works, three new two-story blacksmith, machine and pattern shops, three dwellings, dynamo and other buildings. The water is pure and suitable for silk or paper factories or dye works. Apply to W. A. TORREY, 6 Wall Street, New York.

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American, Canadian and English patent rights of Hubner's Multiple Bolt Threading Machine; will screw 10,000 bolts a day. Apply  
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Made by Cuyahoga Steam Furnace Co., Cleveland, Ohio. Eight million gallons capacity per day. Engine is now in use and is in good order, but soon to be replaced by a larger engine. Address for information, &c.,  
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A competent man as Superintendent in a branch of the iron and steel industry. One acquainted with rolling mill and other machinery, and who would loan \$15,000 and have an interest in the business. This is a favorable opportunity for the right party. Address  
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A well-equipped Machine Shop, with or without shop room. Invoice about \$2500. A rare bargain if purchased at once. Address

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A 10 horse-power

**Charter Gas Engine,**  
in good order, for sale; can be seen running at No. 6, Bridge Stores.

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### Manufacturing Property.

Having purchased the Auburn Manufacturing Company's plant, with greater facilities for manufacturing carriage forgings, which my increasing trade demands, I offer my former plant for sale or rent, which consists of two-story stone and wood building, 80 x 30, and three-story stone and brick building, 75 x 40. Also forge shop, 22-ft. posts, 180 x 54, with large double windows between each bent, 50 x 30 boiler house. Splendid water power, 11 ft. head. One 64-in. American Turbine.

One 24-in. Little Giant Turbine.

200 ft. 2½ Cold Rolled Iron Shafting.

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60 ft. 2-in. Cold Rolled Iron Shafting. Furnished with self-oiling boxes. Water wheel governor; 4-ton Buffalo Scales. The premises cover about 2½ acres. Shipping facilities of the best. Located near N. Y. Central and Philadelphia and Reading depots. Will be sold cheap and on easy terms or rented. For particulars address

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Responsible parties to manufacture and sell on royalty, a cheap portable steel or iron CULVERT BRIDGE; it is adapted to all small streams, runs, etc., in roads, streets, RAILROADS, etc.; improved roads is the order of the day; use this bridge, put it below the level of the road, cover it over and thus prevent jarring and wear and tear of vehicles, etc. Apply to

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Correspondence solicited.

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We are centrally located, active workers and can furnish best of references.

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Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

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Two sets Benjamin & Allen's Trip Hammer Castings, complete and as good as new.  
THE HIRAM HOLT CO.  
East Wilton, Maine.

## FOR SALE TO CLOSE AN ESTATE.

Fine Hardware, Stove, Tinware and Plumbing Business.

In a growing Western town; doing a first-class retail and jobbing business. Stock will inventory about \$85,000. A rare chance, as present owners have been liberal advertisers. Only those who mean business need apply. Address "M. & M." Office of *The Iron Age*, 96-102 Reade St., N. Y.

## AMERICAN MANUFACTURERS

of Hardware Specialties and Machinists' Tools, who are willing to place the sale of their goods in the hands of an old hardware firm of the highest standing whose salesmen cover the entire United States, will please communicate with "W. F. & B." Office of *The Iron Age*, 96-102 Reade St., N. Y.

## Factory Sites Free.

At Keppot, N. J. Twenty miles from New York, on Raritan Bay. Boat and train communication with New York and other markets; water works and other advantages. Reasonable inducements to responsible manufacturing concerns. Address

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JAS. H. GOLDEY, Treas.

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I make a special business of buying and selling Job Lots of

HARDWARE AND CUTLERY.  
Tools and Second Quality Files a Specialty.  
Send for Catalogue.

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## REMOVAL.

The Frasse Company, after occupying their old stand at 92 Park Row for upward of 50 years, have removed to 19 Warren St., near Broadway, where they will carry a large and varied assortment of Tools for every branch of the Mechanical Trades. A specialty is their line of Cycle Repairers' Tools. Chesterman Tapes, Stub's Goods and Fischer Files are some of the specialties they sell.

## WANTED.

To furnish reasonable estimates on specialties in light metal work.

CLARK & COWLES, Plainville, Conn.,  
Manufacturers of Clock Trimmings, Rivets,  
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At Auction,

Wednesday, July 19, 1893,  
At 11 o'clock A.M., on the premises, NEWPORT, KY.  
The Anchor Iron & Steel Works and

The American Bolt & Nut Works.

This splendid property has an entire frontage of 500 feet on Front street, Newport, Ky., with a depth of over 400 feet to the Ohio River.

**The Rolling Mill** has a capacity of 6000 tons of bar and 1400 tons of light or steel sheet per year.

The Bolt and Nut Works have a yearly business of about \$500,000. Both plants are in complete running order and now running to their full capacity. They include engines, roll and sheet mills, bolt and nut machines, &c., &c. A complete outfit for operating the works.

These valuable plants will be sold as an entirety, without appraisement, to the highest bidder on easy terms, to close the estate of L. M. Dayton, deceased. If you wish to examine the property, or for further details, apply to the undersigned at Cincinnati, Ohio.

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N. W. Cor. Fourth and Sycamore Sts.  
JOHN W. HERRON, Executor.

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The Receivers of the Maryland Manufacturing Company, appointed by Circuit Court No. 2 of Baltimore, Maryland, will sell at private sale cheap the entire plant, buildings, &c., of said company, consisting of two brick manufacturing buildings on a lot 80 x 90 feet, subject to a ground rent of \$480 per annum; 14 rivet machines, complete machine shop, electric light plant and all machinery and appliances to make complete line cold pressed rivets. Capacity about 3 tons per day. Ready for immediate operation. Apply to

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Attorneys for Receivers,  
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Two Hand Screw Presses, second hand preferred; a large one for shearing 5-16 and  $\frac{3}{8}$  inch steel to use as gumming saws and a small one for light work. Address

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## UNUSUAL OPPORTUNITY.

### IRON FOUNDRY FOR SALE.

Situated at the corner of Van Pelt avenue and Leonard street, in the city of Brooklyn. Lot 155 feet on Van Pelt avenue and 230 feet on Leonard street.

Sale under the direction of Frederick P. Belamy, Referee, on the 7th day of July, 1893, in the rotundas of the County Court House, in the city of Brooklyn, at 12 o'clock noon. For further particulars inquire of

MAN & MAN,  
56 Wall St., New York.

## BESSEMER IRON ORE LAND.

An opportunity is open to a strong syndicate or wealthy capitalist interested in iron and coal to obtain ultimately without cost an interest in the largest and best body of hematite iron in the United States. According to report of U. S. Geologist, the ore in sight above ground is worth more than \$400,000,000. This tract, containing thousands of acres of iron and coal land, is located near a river and near one of the prominent railroads of the country. Every facility exists for making an immense fortune for the party who will take an interest and furnish money for development. For full particulars address the owner,  
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A ELECTRICAL Engineer and Designer of a well-known and successful system of electric lighting is desirous of corresponding with parties possessing an equipped machine shop or others who may desire to extend their operations for the manufacture of dynamos, motors and other electrical specialties, with a view of building and establishing a permanent and valuable business. Address "REX," office of *The Iron Age*, 96-102 Reade St., New York.

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Combination Steam or Hot Water and  
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Institute. No. 2, 1892. 584 pages, with 27 plates.  
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**Mineral Industry (The).** Its Statistics, Technology and Trade, in the United States and other Countries, from the Earliest Times to the End of 1892. Edited by RICHARD P. ROTHWELL. Vol. I. 1893. Svo.....cloth, \$2.50; paper, \$2.00

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Exhibit in Gallery, Manufactures Building, World's Columbian Exposition, Section E Col. T-108 and active exhibit in Machinery Hall.

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Well endowed. Well equipped. Courses in Mechanical, Electrical, Civil Engineering and Chemistry. Extensive Machine Shops, Laboratories, Drawing Rooms, Library. Expenses low. Address H. F. EDDY Pres

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13 in.  
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Successors to  
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Vertical pattern, with balanced steam slide valve gear, steam cylinder 14 in. diameter, air cylinder 40 in. diameter, stroke 24 in. 1 to 100 strokes per minute; engine new.

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A S SUPERINTENDENT, by a man thoroughly posted in modern shop methods and the designing of special tools for the cheap production of interchangeable work; can control the manufacture of a lathe on which I hold U. S. patents if desired; best of references. "INVENTOR," office of *The Iron Age*, 146 Franklin St., Boston.

BY A MAN having been engaged in commission steel and iron business. Address "MAN," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

A LIVE ENERGETIC SALESMAN, familiar with the iron and steel trade, pig, sheet, bar, pipe, tubes, &c., desires position in office or on the road; eight years' experience; best of references. Address "COMPETENT," Office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

A S MANAGER BESSEMER STEEL WORKS. The advertiser, John Facer, late of Hampton & Facer's Special Steel Works, Maryport, England, wishes to meet with a situation. He understands all tempers of carbons, silicones and manganese from tin bar upwards, and has had 30 years' practical experience. Address office of *The Iron Age*, 220 South 4th street, Philadelphia.

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A S SUPERINTENDENT of iron or steel mill by a practical man; am also capable of building iron or steel mills, having built five, all running successfully; no objections to going abroad; will accept position as assistant builder or running of works; can furnish best of references from former employers. Address "WALTER," No. 68, office of *The Iron Age*, 96-102 Reade St., New York.

CHEMIST, experienced in iron analysis, open to engagement; willing to assist in work outside of laboratory; highest references. Address "IRON ANALYSIS," office of *The Iron Age*, 96-102 Reade St., New York.

SUPERINTENDENT or Manager, by a man with 18 years' experience in machine shops, foundries and rolling mills; for six years general superintendent of large concern manufacturing frogs, switches and general railroad supplies; for five years general manager of large concern operating rolling mills and coal mines in the South; engaged now; can give satisfactory reasons for changing; can give the very best of references from men well known in the iron business in Eastern Pennsylvania. Address "SUPERINTENDENT," office of *The Iron Age*, Bank of Commerce Building, St. Louis, Mo.

R OLL TURNER —A thoroughly experienced Roll Turner wants a position; 30 years' experience in all classes and shapes in iron and steel; best of references given. Address "ROLL TURNER," No. 622, office of *The Iron Age*, 96-102 Reade St., New York.

A S CHEMIST for iron or steel plant by an experienced chemist; best of reference given. Address "D. R. C.," Box 61, office of *The Iron Age*, 96-102 Reade St., New York.

TURBINE WHEELS.—Expert Designer of turbines is open for engagement; is able to design all systems, styles and sizes with the highest possible percentage of efficiency. Address "TURBINE," office of *The Iron Age*, 96-102 Reade St., New York.

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A S FOUNDRY FOREMAN: am well up in all foundry practice; have had large experience in the handling of men; am strictly temperate; references present employers. Address Box 100, Leeds Station, Sioux City, Iowa.

T RAVELING SALESMAN, with ten years' experience in Canadian territory, thoroughly posted in brass foundry, plumbers' and steam fitters' supplies, seeks engagement with American firm; all references. Address "SALES-MAN," office of *The Iron Age*, 59 Dearborn St., Chicago.

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*Undisplayed Advertisements for  
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Additional words two cents each.*

F OREMAN of foundry who can turn out good malleable castings at low cost; must know his business thoroughly. Address, stating salary, "MALLEABLE," office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

E XPERIENCED SALESMAN on commission to represent first-class manufacturing concern making light kitchen utensils. "KITCHEN UTENSILS," office of *The Iron Age*, 96-102 Reade St., New York.

WE WANT YOU to carry our goods as a side line; takes with every advertiser and business man; large sales can be made; speak quick. Address AM. BILL FILE CO., Greenwood, Miss.

T RAVELING SALESMAN, capable and energetic man, to sell imported steel and other metals and goods used by machinists and bicycle manufacturers. Address, giving age, qualifications and references. "G. B. W.," No. 103, office of *The Iron Age*, 96-102 Reade St., N. Y.

A LAR GE TINWARE manufacturing house wants a man thoroughly posted in that line to take full charge of their shipping department, which includes the setting out and packing of orders; one who has held a similar position preferred; to the right party this is an excellent opening. Address, with reference, "TINWARE," No. 629, office of *The Iron Age*, 96-102 Reade St., New York.

A SUPERINTENDENT to take charge of a manufacturing enterprise; goods manufactured consist of heavy wagons, agricultural implements and special iron work; applicant must be good draftsman familiar with both wood and iron working machinery and experienced in handling men. Address, giving references and stating salary expected. A BALDWIN & CO., Limited, New Orleans, La.

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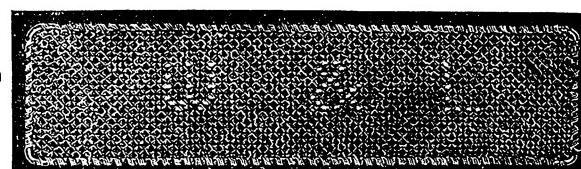
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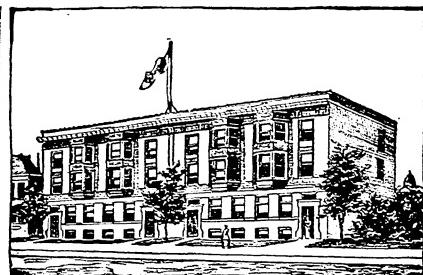
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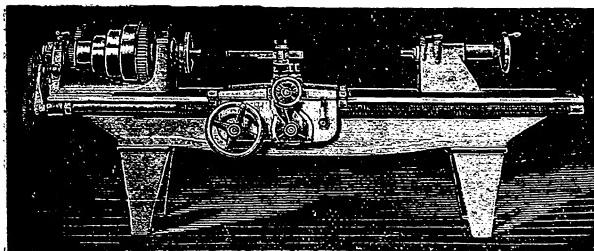
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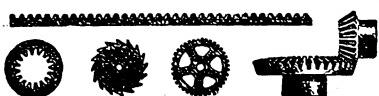
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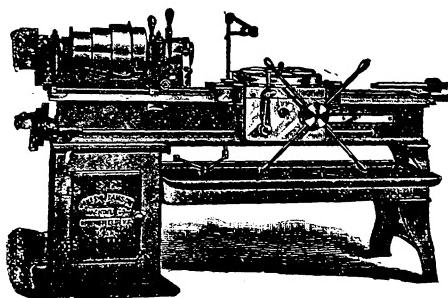
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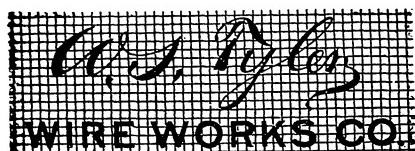
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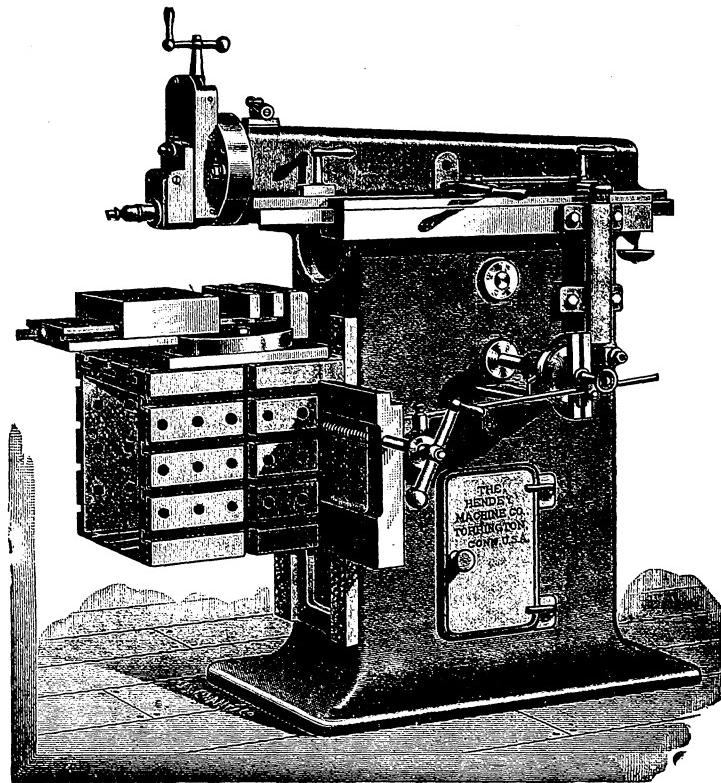
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Offer Aluminum guaranteed equal in purity to the best in the market, at lowest rates obtainable.

ALUMINUM SHEET, WIRE,  
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Heavy 25 inch Pillar Shaper with power down feed, large vise and many improvements.

# A TIME SAVER IN THE MACHINE SHOP.

For Particulars Apply to the  
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From the Knives of  
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Ease of Running.

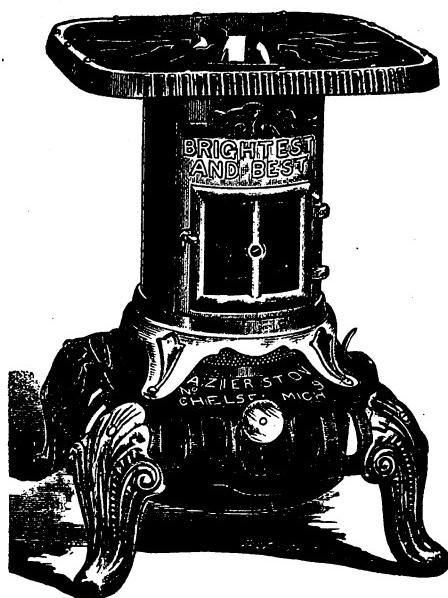
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Best of all—the ease.

Thorough Construction.

Finest Material.

E. C. Stearns & Co., - Syracuse, N. Y.



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Beauty, Utility,  
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ALL COMBINED IN

## B. & B. Oil Cook Stoves

The great feature of these stoves is, *they sell at sight.*

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W. W. MONTAGUE & CO., San Francisco, Cal., Agents for the Pacific Coast.

The standard by which the merits of a Freezer are gauged is, how near it comes to being as perfect as the



## WHITE MOUNTAIN ICE CREAM FREEZER.

It always has been, and is still, the best. Try them.

—MANUFACTURED BY—

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### THE OLD RELIABLE STANDARD FREEZER

has the reputation of being the BEST ICE CREAM FREEZER ever introduced. STRENGTH, DURABILITY, NEATNESS AND EFFICIENCY are prominent points in the manufacture. Full Size Can, CEDAR TUB, Detachable Hinged Crossbar, Self-adjusting Vibratory Scraper, etc.

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Complete Machine securely packed in one single package.  
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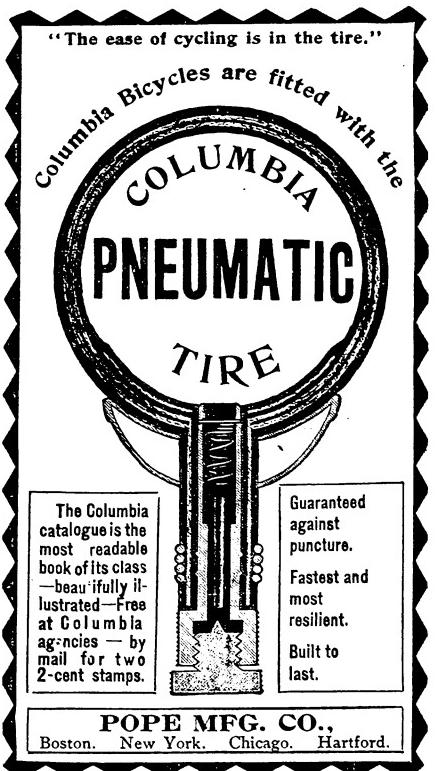


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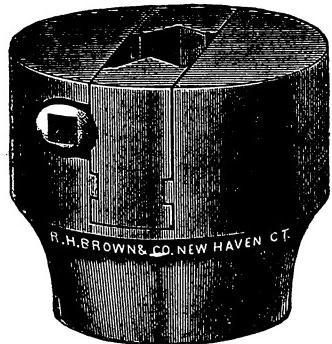
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## THREE SIZES.



No. 0 takes any drill from 0 to 1-2 inch inclusive.

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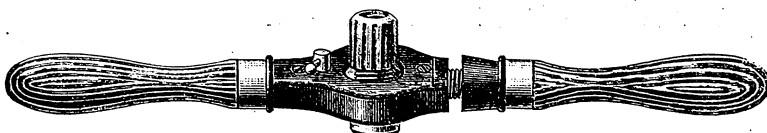
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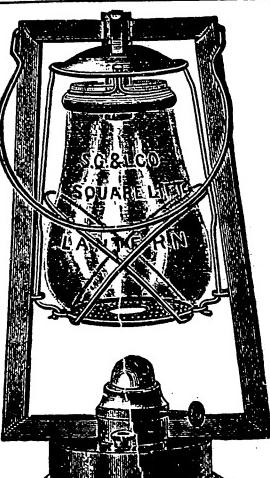
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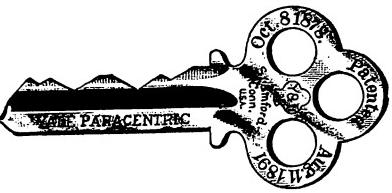
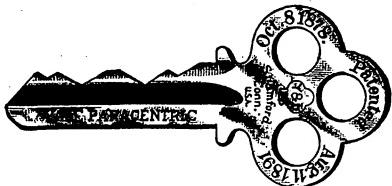
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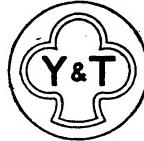
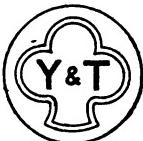
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The people ask for

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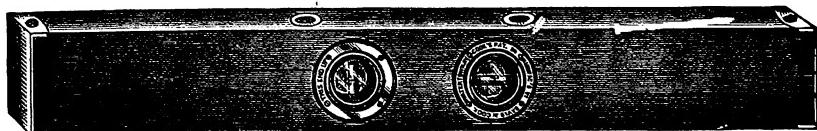
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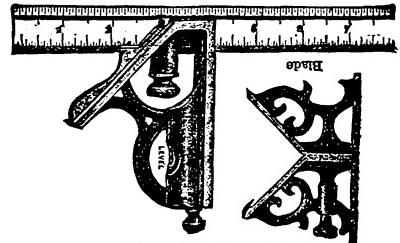
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Fig. 180.

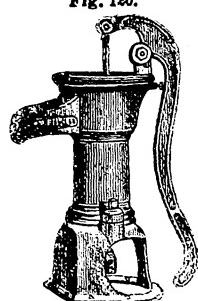
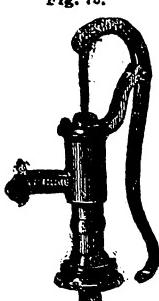


Fig. 76.



or wherever it is desired to raise a large quantity of water by hand power.

The pump has large valves (accessible by hand) and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

Capacity from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.  
Made either as shown in cut for Hose or for IRON Pipe Suction underneath.

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Fig. 203.

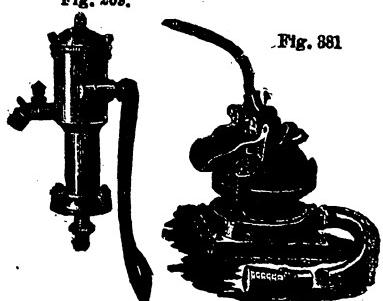
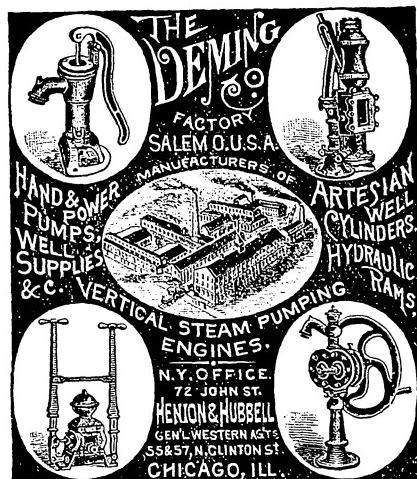
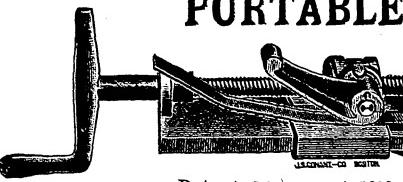


Fig. 881



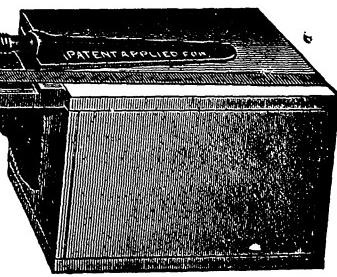
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One man can band boxes quicker than two men can in any other way. The boxes are made absolutely secure. Lighter material can be used, saving freight and lumber. Made of malleable iron and steel, is strong and durable, weighs 8 pounds. Send for Price.

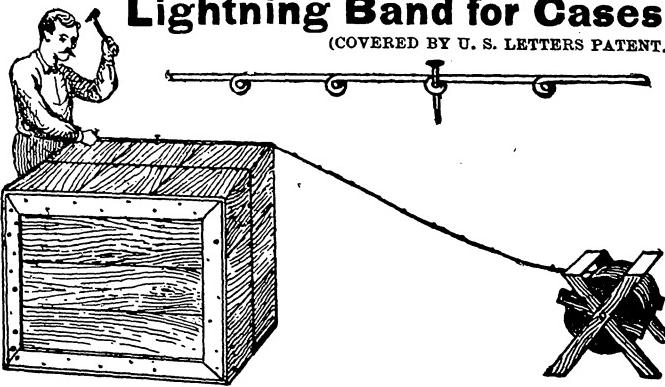


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(COVERED BY U. S. LETTERS PATENT.)



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Flyers for cutting wire, 50 cents extra.

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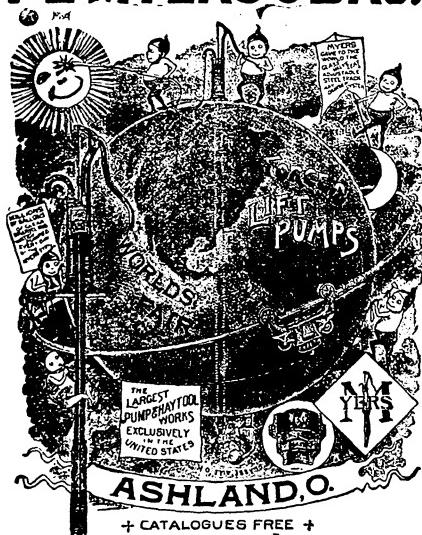
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Buffalo Specialty Mfg. Co.

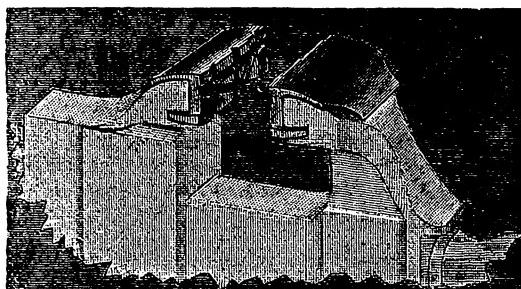
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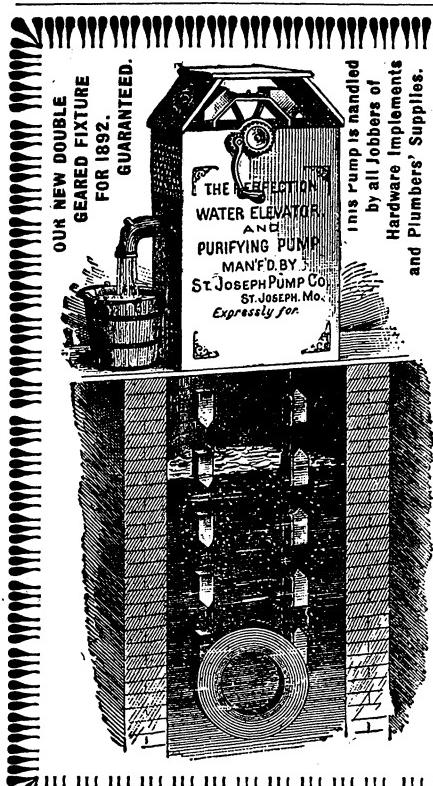
4 1/2 " " " " 60 "

PRENTISS VISE CO.

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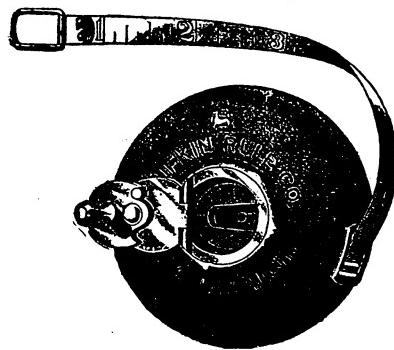


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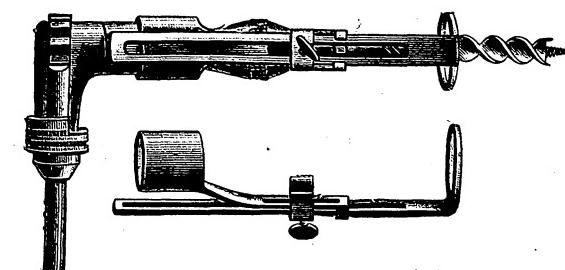
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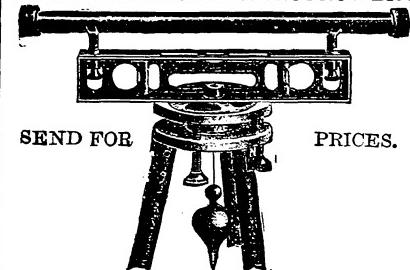


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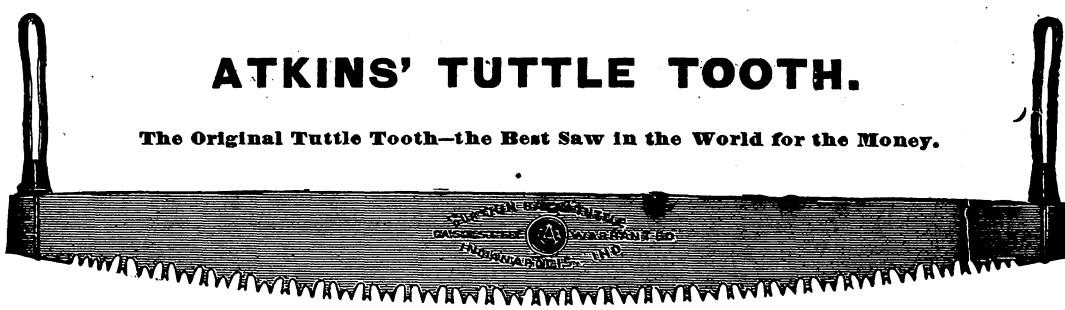
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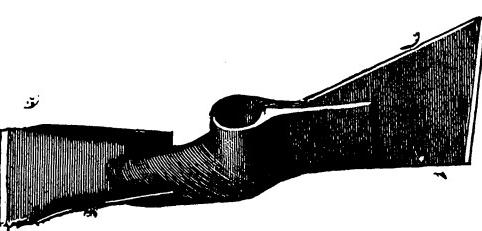
Pocket Companion. Containing useful information and tables appertaining to the use of wrought iron and steel as manufactured by Carnegie, Phipps & Co., Ltd., Pittsburgh, Pa. For engineers, architects and builders. 1892 edition. Edited by C. L. STROBEL C.E., assisted by F. H. KINDL, C.E. Leather with flap, 334 pages. \$2.00

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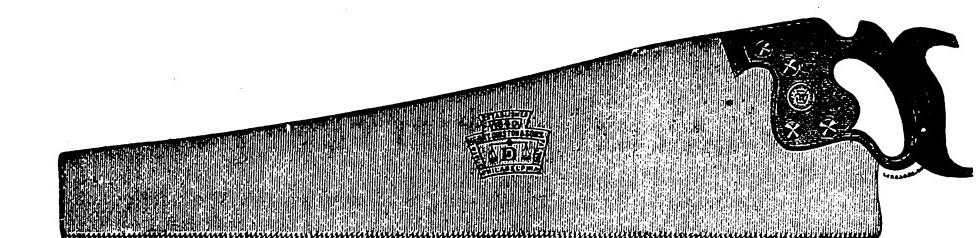
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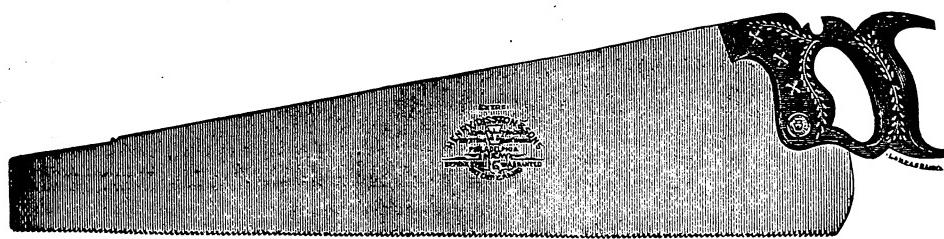
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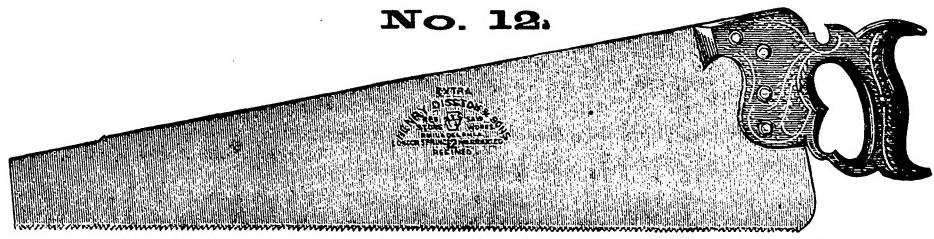
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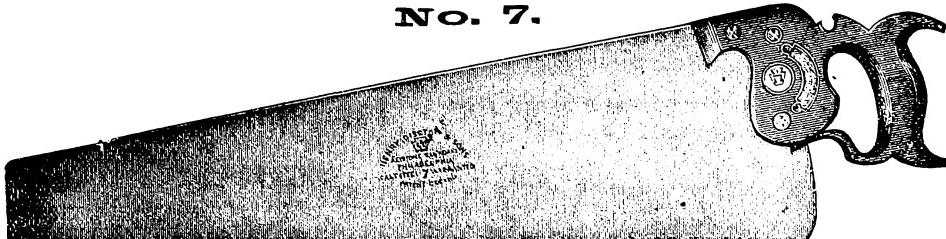
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Manufacture and keep in stock a full line of FILES and RASPS only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

*Superiority acknowledged wherever used, sold or exhibited.*

BEST

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STEEL.

"TROJAN" HORSE RASPS.

LOWEST

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STRONGEST  
TOOTH.

BANKER & WHITE,

TROY, N. Y.

LET  
US  
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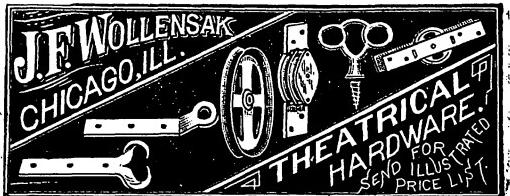
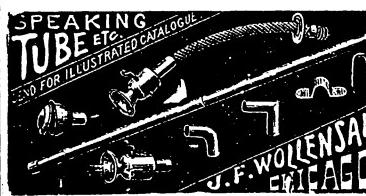
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Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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MONCE'S Novelty Glass Cutters are the standard. No. 17 just out. Send for Illustrations and Price. We also make the Compartment Font Interchangeable Lock Stencils that are having such run



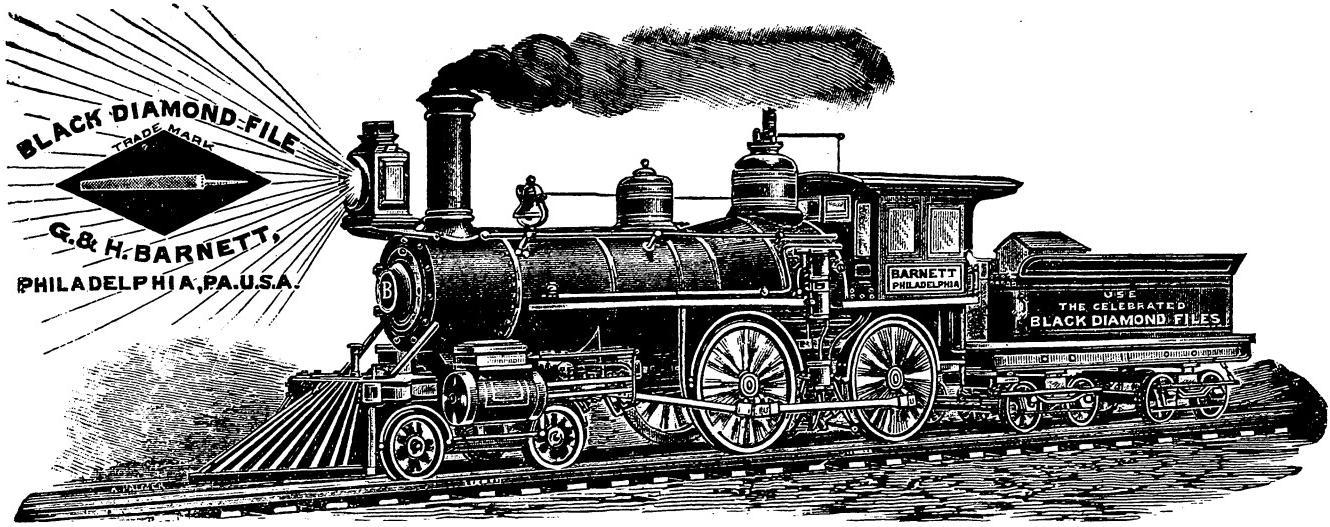
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**STEEL STAMPS**  
For Every Purpose.  
Steel Letters & Figures.  
Burning Brands, Stencils  
&c. Send for Illustrated  
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VARIETIES 3000  
FILES  
3000  
STEEL STAMPS  
STENCIL DIES



## J. M. KING & CO., WATERFORD, N. Y.

Manufacturers of  
**BUTTON'S**

### **Pat. Wire Cutter AND PLIER COMBINED.**

Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and  
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TAPER TAPS, HAND, NUT and SCREW  
TAPS, PIPE TAPS and REAMERS.

Price-List on Application.

Established by DANIEL B. KING, 1829.

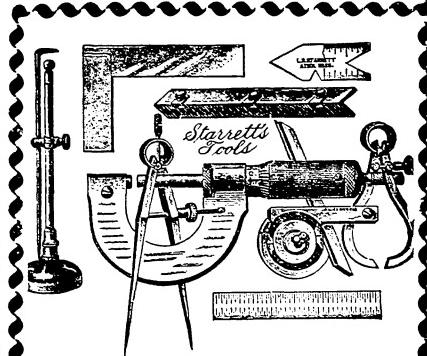
THE H. M MYERS COMPANY  
ONE SOLID STEEL PIECE  
SOLID STEEL SHOVELS

THE BLADE  
Are made from  
this one solid  
Piece of Steel.

AND STRAPS  
A Perfect  
Plain Back Tool  
With thick Centre.

WITHOUT WELD OR RIVET  
CAREFULLY TEMPERED  
BEAVER FALLS, PA. AND DISCOUNTS

THE H. M. MYERS COMPANY  
TRADE MARK  
BEAVERFALLS, PA.



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want tools that are warranted accurate, best in workmanship, latest in design, finest in finish.

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want tools they can swear by, not at. That can be relied upon to satisfy intelligent customers. That come nicely put up. That pay a good profit.

### Starrett's Tools

meet the requirements of both.

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**Skinning, Sticking, Farriers' & Shoe Knives,**

Have established and maintained their reputation, for superiority, against all Competitors, from

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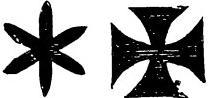
and are still in increasing demand. As in the past, it is the unalterable DETERMINATION OF THE HOUSE TO SEND OUT NOTHING BUT WHAT IS OF THE HIGHEST POSSIBLE QUALITY.

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CHAINS, FILES.

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"The Manhattan Dumb Waiter."  
"The Improved Humphrey Hand Elevator."  
Made specially to be sold by Hardware Stores. Thousands in use. Catalogues on application.

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Formerly of Poughkeepsie, New York.

**THE FOX SAFETY RAZOR.**

(U. S. Patent 484,116, October 11th, 1892.)

Is the finest and most practical in the world.

**EVERY MAN HIS OWN BARBER.**



Makes shaving a luxury; no danger of cutting. Adjustable blade. Silver plated frames. Sole manufacturer and patentee,

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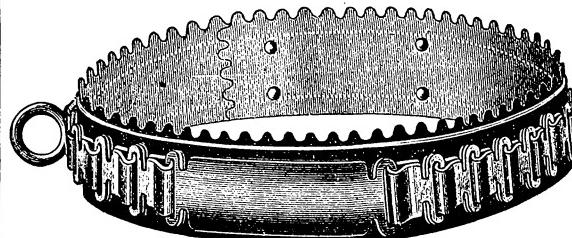
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English Riveted Scythes and Grass Hooks.

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Scythe Snaths, Scythe Stones,  
Poultry Netting, Green Wire Cloth,  
&c., &c., &c.

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**HALTER  
CHAINS,**

**Dog Leads**

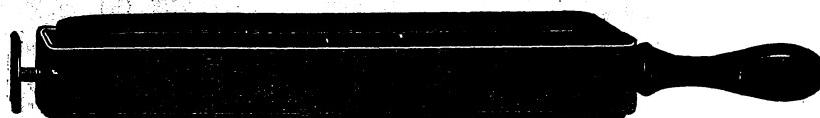
AND

**Key Chains.**

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No. 8 X.

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BUCK BROTHERS,**

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Shank, Socket Firmer and Socket Framing  
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**PLANE IRONS.**

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CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by unprincipled persons who represent them as our make. Our tools are stamped "BUCK BROTHERS," and our labels have on our trade-mark also, "Riverlin Works."

Established 1825.

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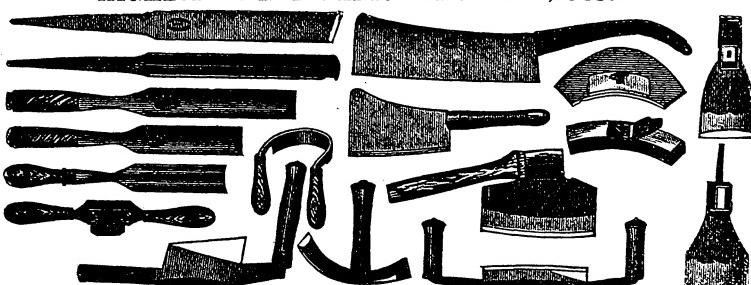
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FOR THE CORRECT MODE IN SHAVING  
USE CURLEY'S PATENT  
**SAFETY**

**GUARD**      **RAZOR**

THIS improvement permits CORRECT SHAVING, therefore no irritation is caused, and the most inexperienced can shave with perfect safety.

We also carry the largest line in the United States of CUTLERY of every description.

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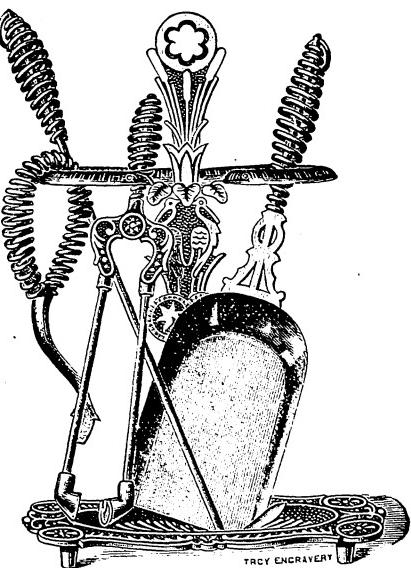
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Commission Hardware.**

88 Chambers St., New York.

Agent—G. W. Bradley's Edge Tools, Axes, Coopers' Tools, Cleavers, Bush Hooks, Draw Knives, Ship-Carpenters' Tools, &c. Also a full stock of Planes, Brooks' Bright Wire Goods, Washita Stone and Taunton Tack Co.'s Rivets, &c.

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Stove Trimmings.

Pokers, Lifters, Shovels, Fire Sets.



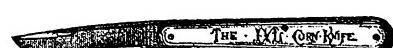
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For Sale by All  
First-class Jobbers in Hardware.  
Made under Gaitly Patents and only by

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FRANCIS FROST & CO., Toronto, Ont.  
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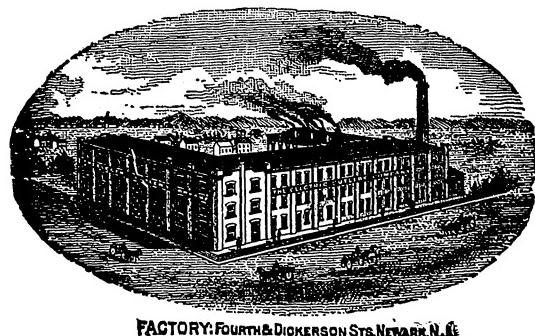
WHEN IN WANT OF  
**WOSTENHOLM'S**  
**I★XL**



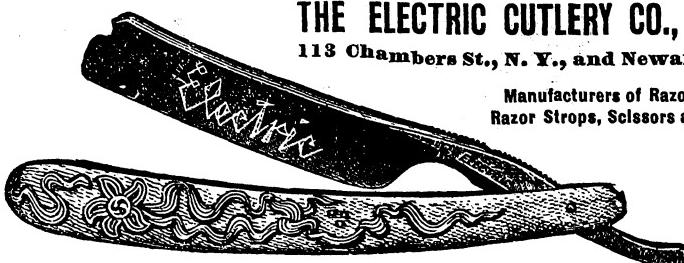
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FACTORY: FOURTH &amp; DICKERSON STS. NEWARK, N. J.



THE ELECTRIC CUTLERY CO.,

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Manufacturers of Razors, Knives,  
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SALESROOM,

TABLE CUTLERY, BUTCHERS' CARVERS, PLATED GOODS, &amp;c.

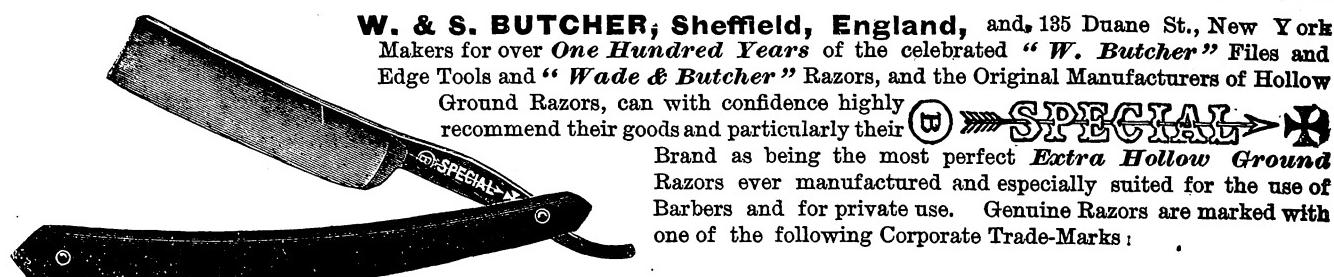


NORTHAMPTON CUTLERY CO.

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MANUFACTURERS OF

Send for Revised Catalogue.



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Makers for over *One Hundred Years* of the celebrated "*W. Butcher*" Files and  
Edge Tools and "*Wade & Butcher*" Razors, and the Original Manufacturers of Hollow  
Ground Razors, can with confidence highly recommend their goods and particularly their **(W) ➤ SPECIAL ➤**

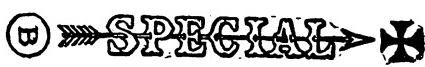
Brand as being the most perfect *Extra Hollow Ground* Razors ever manufactured and especially suited for the use of  
Barbers and for private use. Genuine Razors are marked with  
one of the following Corporate Trade-Marks:

WADE & BUTCHER  
SHEFFIELD, ENGLAND

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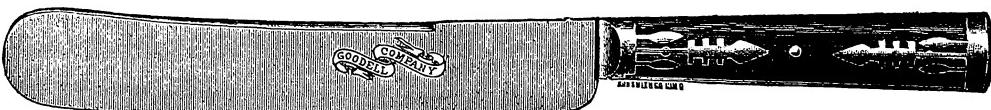


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WE CLAIM

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Knives and Forks, Carvers, Butcher Knives, Butcher Steels, Skinning,  
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A LARGE VARIETY.

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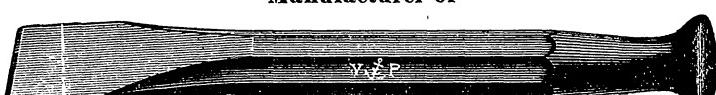
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**Edge Tools,  
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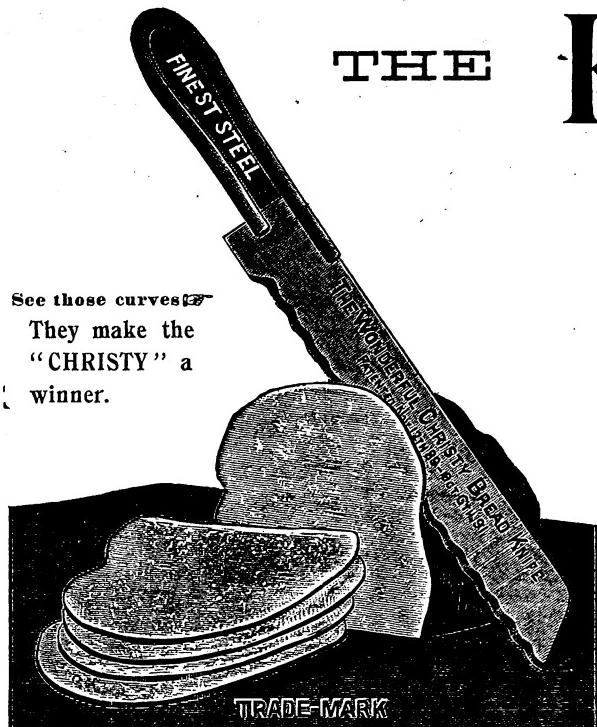


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Railroad,  
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AND

**B. S. Tools.**

Philadelphia Pa., U. S. A.



# THE Knife THAT Christy

Invented is imitated, but unequaled. You can detect the imitation by its appearance and bending of the blade. The Christy will not stay bent as does the spurious product, besides

Its Edge is a Cutting One.

Dealers are handling them all over the United States, because there's a demand for them. Do you? If not, write for discounts.

The Christy Knife Co., FREMONT,  
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## THE AMERICAN BIT-BRACE & TOOL CO., MANUFACTURERS OF BIT BRACES.

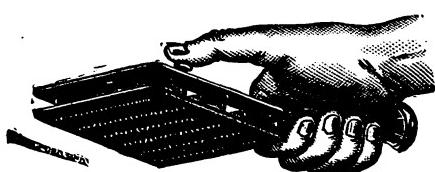
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—If one of our Travelers has not called on you, write for prices.—

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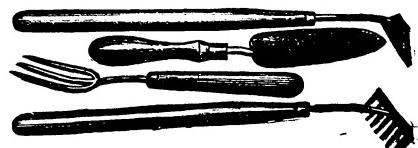
All Orders Filled Promptly.



A full line of Boys' Garden Sets, Floral Sets  
Kitchen Hardware and Hardware for Children's  
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Sole makers of the celebrated "Maud S."  
Self-Cleaning Curry Comb.

**B. B. NOYES & CO.,**  
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Send for full Catalogue and Prices.



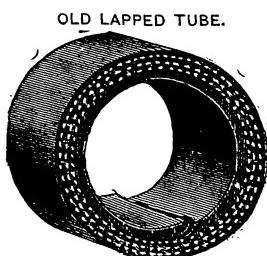
## Who Has Not Had Bad Hose?

Who has not lost time, patience, money, by attempting settlement for such goods?

**THE CAUSE** in nine cases out of ten is the lapped seam.

**THE REMEDY** is in buying our

**PATENT SEAMLESS-TUBE HOSE,**  
made by machinery, the tube run like lead pipe, through a die. There is no lapped tube, no seam, no cracks, no defects; water cannot get through to rot the duck and cause the hose to burst.



Made in All Sizes and Kinds of Garden, Engine, Steam, Fire, Brewers' Cotton Hose, &c.

Order a Sample Bale of our Seamless-Tube Hose—Best in the World, costs no more than ordinary lapped-seam hose. The different colors, Red, White, Black, Green and Yellow, make a fine window or sidewalk attraction.

**SALES OF**  
Over Two Million Feet

—OF—  
**GARDEN HOSE**  
alone during the past year,  
distributed throughout  
the United States, and not a single piece complained of,  
justifies us in guaranteeing  
that it will give absolute  
satisfaction.

**CLEVELAND RUBBER WORKS**  
of the Mechanical Rubber Co.,  
CLEVELAND, O.

Makers of Mechanical Rubber Goods, Clothing, Druggist's Sundries, Specialties, Etc.

We were awarded an order of  
25,000ft. for World's Fair

of our Celebrated

**Seamless-Tube**  
COTTON RUBBER-LINED HOSE.

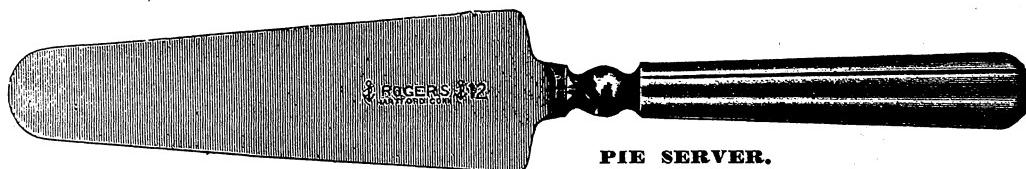
We Want Your Trade.  
Send for 60-page Catalogue.  
Write for Prices and Samples.

—NONE BETTER—

THAN THE



# SILVER PLATED WARE.



PIE SERVER.

MANUFACTURED BY

THE WM. ROGERS MFG. CO.,

Office and Factory, HARTFORD, CONN. P. O. Drawer 80.

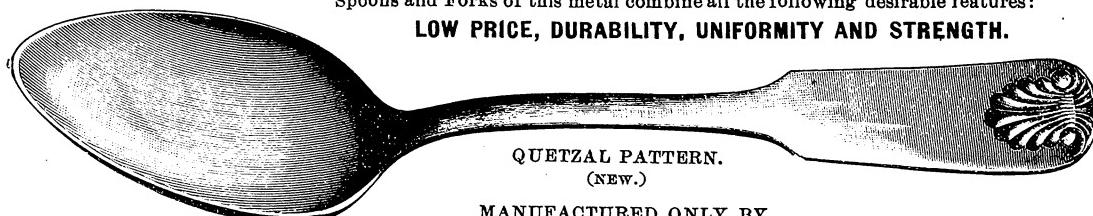
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## AZTEC COIN METAL

MADE INTO SPOONS AND FORKS.

Spoons and Forks of this metal combine all the following desirable features:

LOW PRICE, DURABILITY, UNIFORMITY AND STRENGTH.



QUETZAL PATTERN.  
(NEW.)

MANUFACTURED ONLY BY

THE HOLMES & EDWARDS SILVER CO.,

Bridgeport, Conn.

AZTEC COIN METAL  
has no plating to  
wear off. Made  
of solid metal.  
Easily kept clean.

## WAKE UP!!



And see what the Ohio Lantern Co. can do  
toward brightening up your Lantern trade the  
coming season.

Do you know the "Surprise Tubular" pleases the consumers?

Do you know its tubes are each made from  
one piece of metal, with smoothly rounded  
turns instead of unsightly, kinky elbows?

Do you know that it stands more wind than  
any other?

Do you know you pull a catch and it opens  
itself?

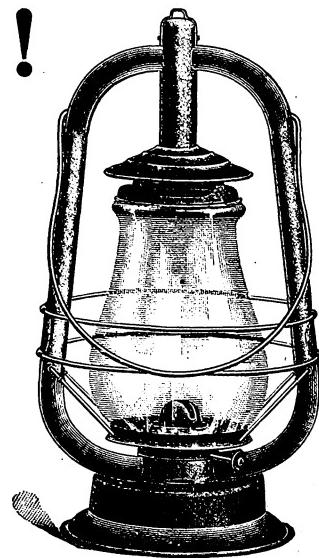
Do you know it is the cheapest good tubular made?

Do you know it is the prettiest lantern out of doors?

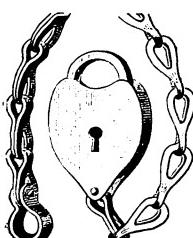
Do you know it is a great seller? If not, you should send small sample order  
and see at once why your trade has waned.

OHIO LANTERN CO.,

= = = Tiffin, Ohio.



SURPRISE TUBULAR.



Bicycle Locks.  
Bicycle Bells.

Especially Low Prices.

We manufacture  
hardware specialties  
of all descriptions to  
order.

HAINES & ZIMMERMANN, 407 Cherry St., Phila.



FIG. 3. Showing Davis  
cork-screw and fulcrum  
in position to pull cork.

## DETROIT CORK-SCREW CO.,

DETROIT, MICH., U. S. A.

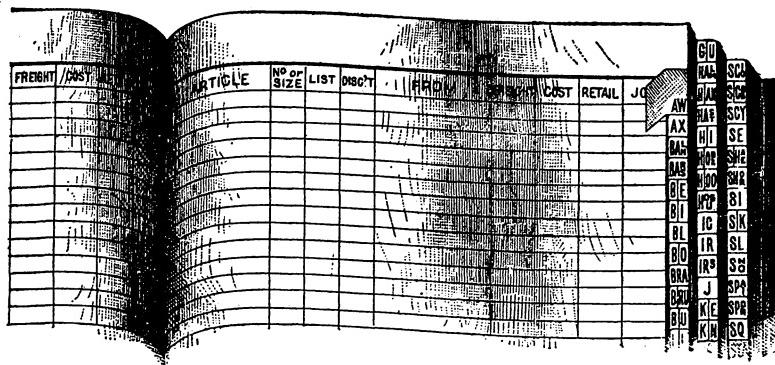
Manufacturers of  
The Davis Cork-Screw,  
The Davis Knife and Cork-Screw,  
The Puddfoot Cork-Screw,  
Columbus and Greely  
Cork Extractors.

Manufacturers of  
Cut Worm  
Spiral Screws and  
Cork-Screw Novelties.  
Cut Worm Cork-Screws  
for the Bar Cork Puller

Send for Price-List and Discounts.

# The Iron Age Hardware Price Book E.

SECOND EDITION, REVISED AND ENLARGED, WITH MULTIPLE INDEX (Patent Pending)..



AD	GU	SC	O
AN	HAL	SCR	
AU	HAN	SCY	
AW	HAT	SE	
AX	HI	SHA	
BAL	HOP	SHO	
BAR	HOO	SI	
BE	HOS	SK	

Fac-Simile of Indexing.

**SIZE.**—The book is 7 x 10 inches (much larger than Price Books A, B, C, or D), 350 pages.

**PAPER.**—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.

**BINDING.**—The binding is of the very best quality—flexible seal grained leather.

**INDEX.**—By means of the arrangement shown in the cut the index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line.

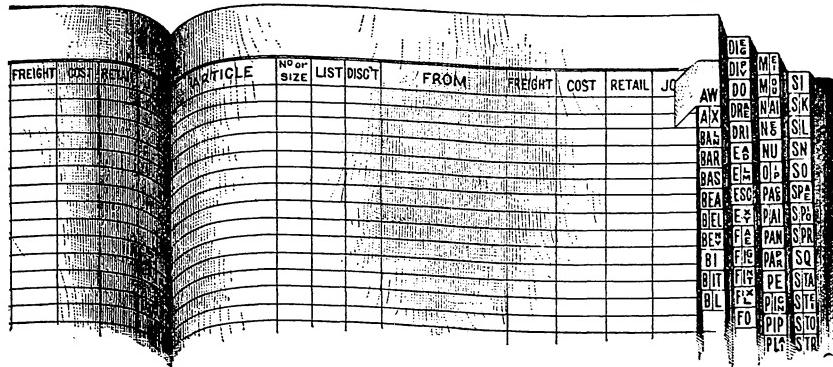
**ARRANGEMENT.**—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.

**SUPPLEMENT.**—A 40-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

**THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, \$5.00.**

# The Iron Age Hardware Price Book F.

WITH MULTIPLE INDEX (Patent Pending).



AD	DI	ME	SI
AN	DIV	MO	SK
AU	DO	NAI	SL
AW	DR	NE	SN
AX	DRI	NU	SO
BAL	EA	OP	SPA
BAR	EM	PAC	SP
BAS	ESC	PAI	SPR

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For Augers,	turn to	AU	For Chisels,	turn to	CH	For Iron,	turn to	IRO
" Parers, Apple	"	PAP	" Cutlery,	"	CUT	" Irons,	"	IR'S
" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SHO
" Pumps,	"	PUM	" Rules,	"	RUL	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.

It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.

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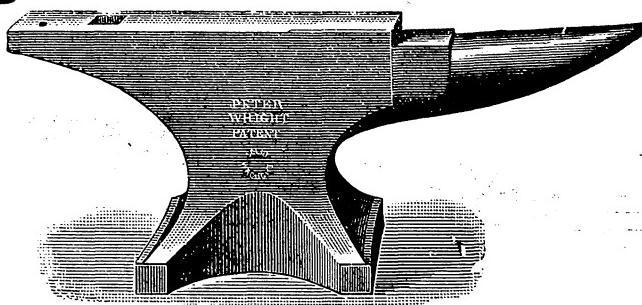
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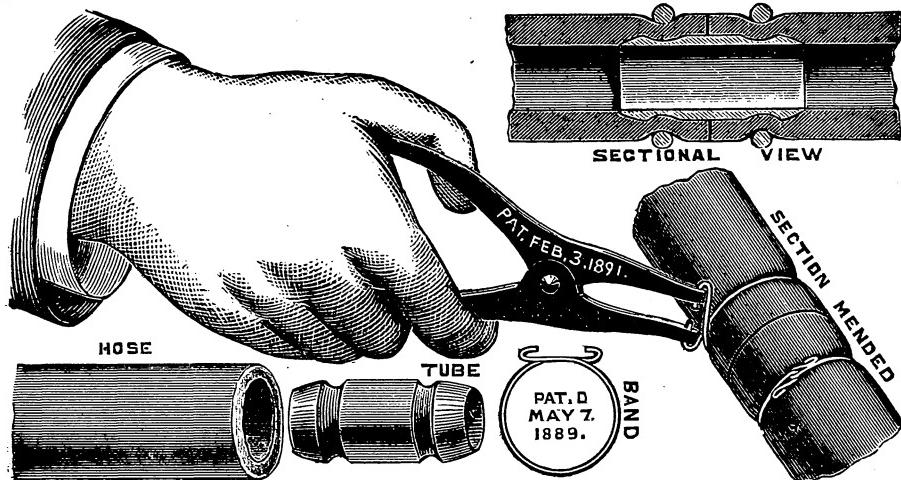
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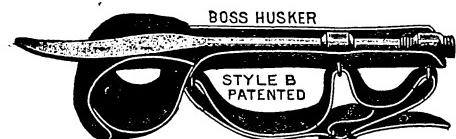


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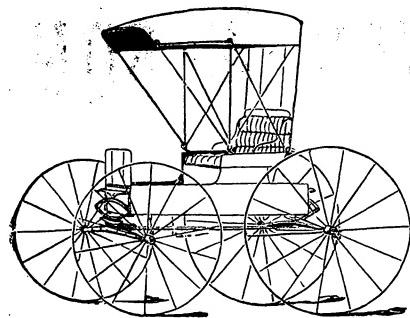
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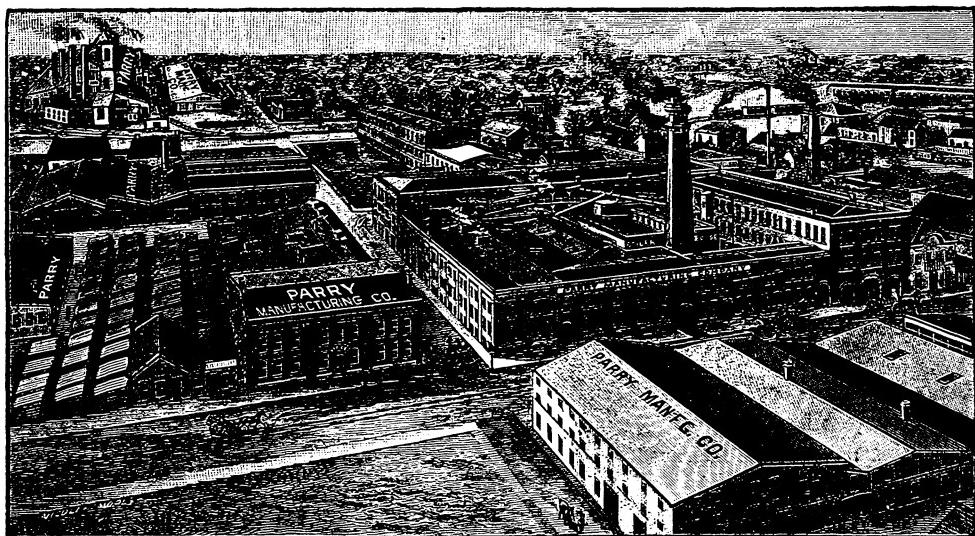
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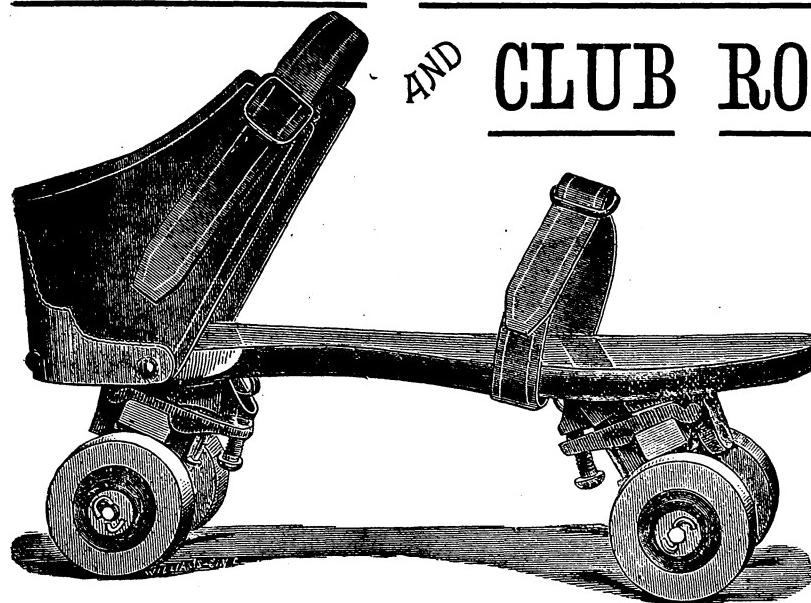
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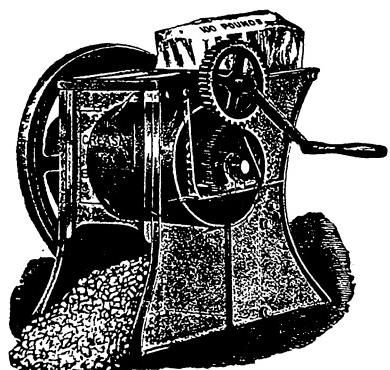
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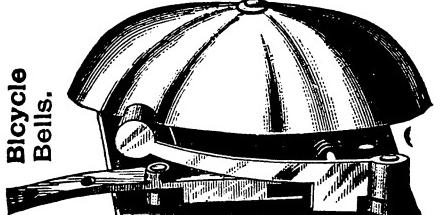
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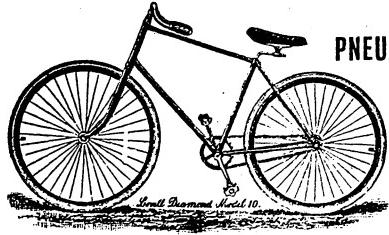
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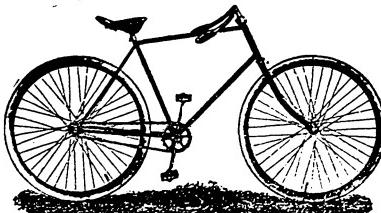
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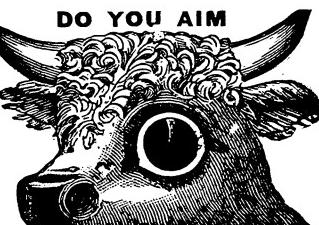
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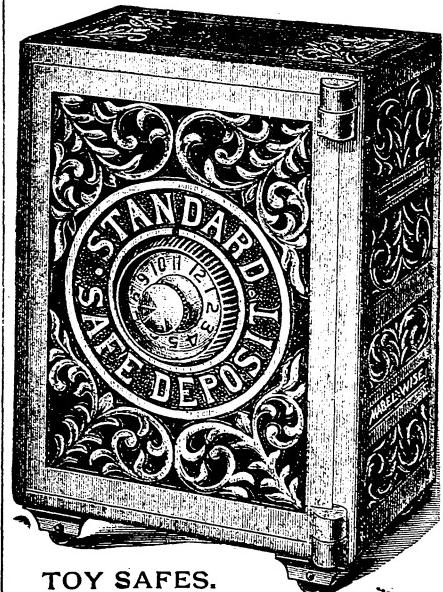
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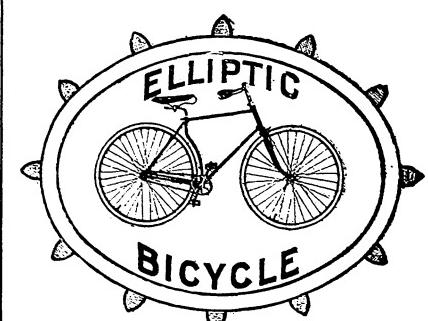
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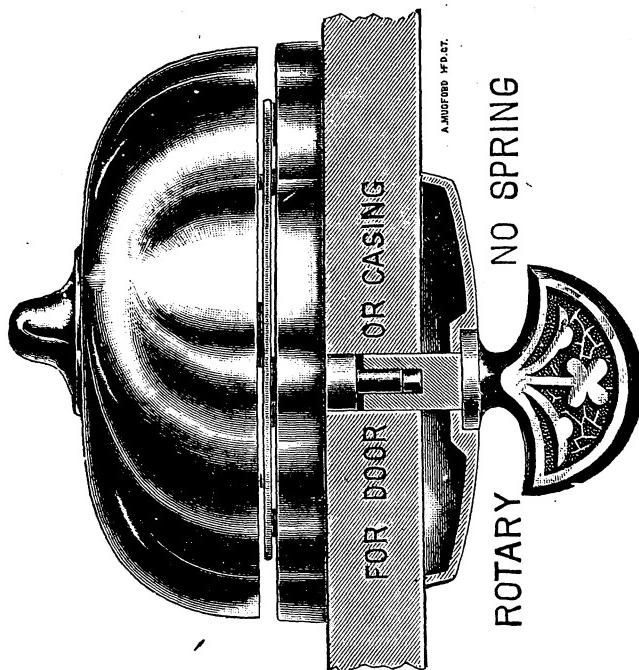
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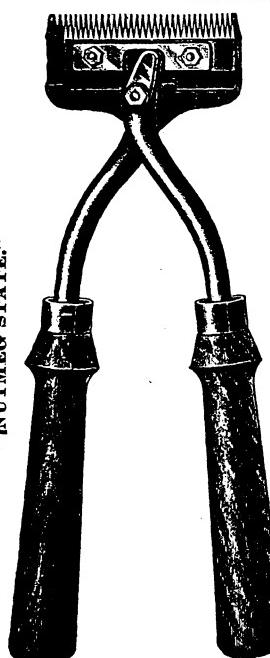
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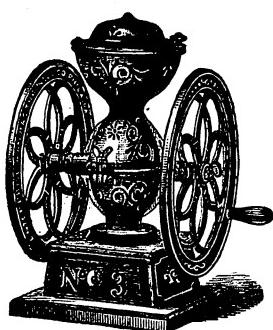
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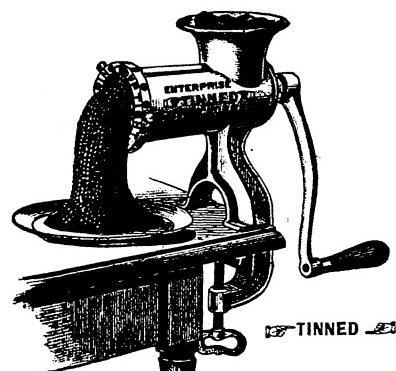
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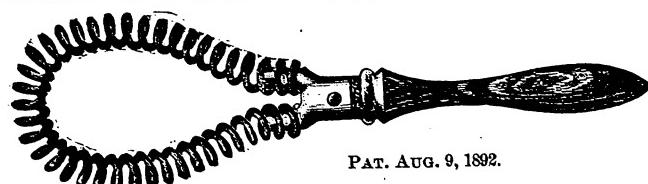
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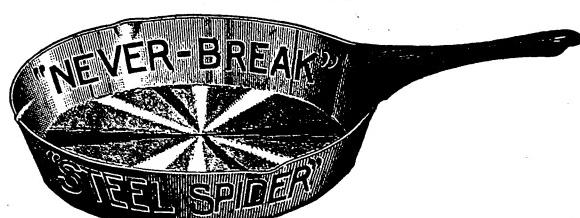
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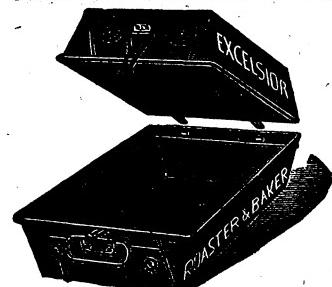
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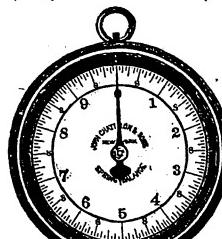
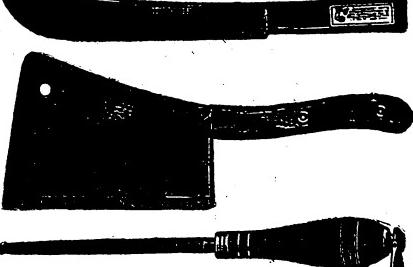
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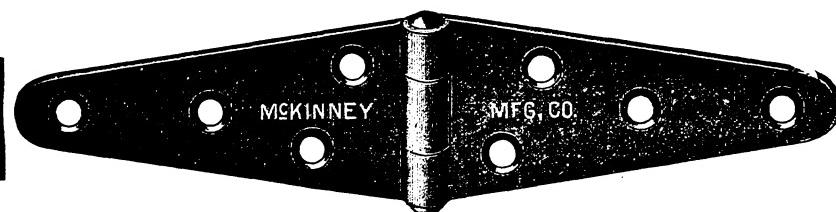
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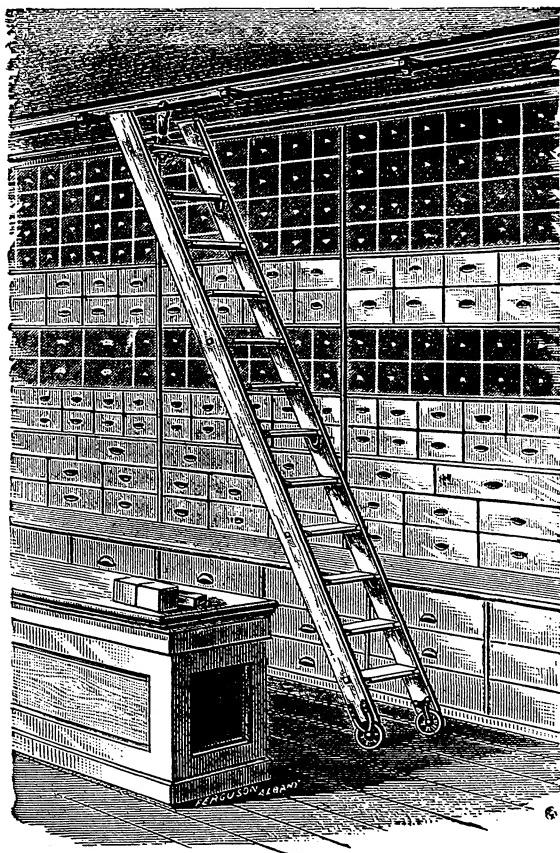


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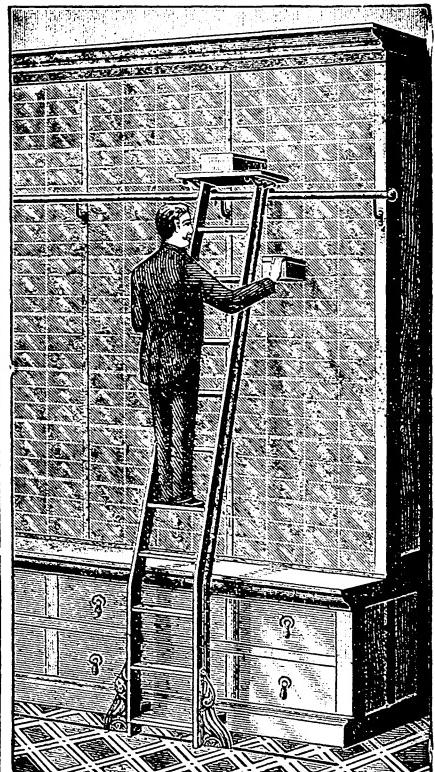


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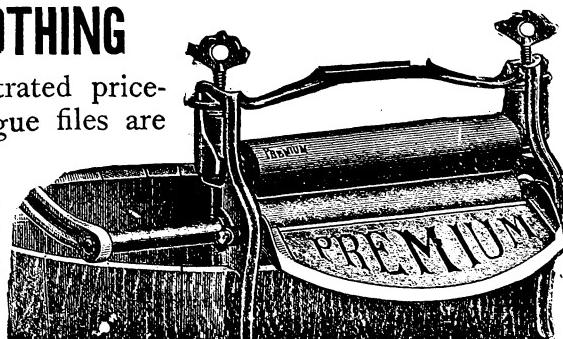
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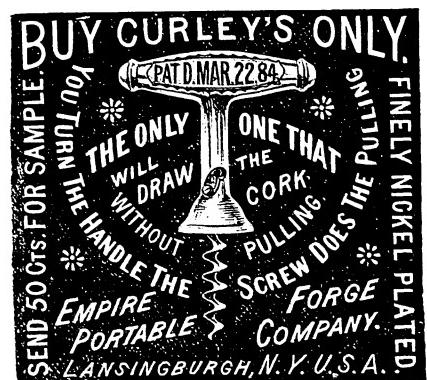
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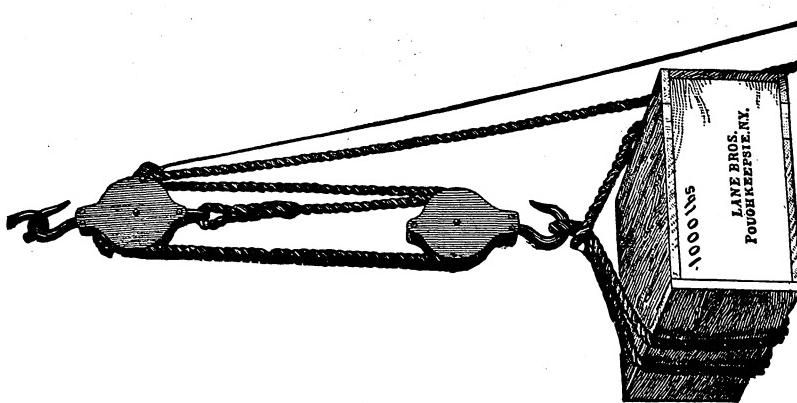
to send for our illustrated price-list, and your catalogue files are incomplete without it. Write to the Factory, Montpelier, Vt., or to our Chicago store, 68 Lake St.



**COLBY WRINGER COMPANY.**



N. Y. Office, 103 Chambers St., W. H. QUINN, Manager.



## LANE'S SELF-LOCKING TACKLE BLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

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## WANTED, Your Attention.

DID IT EVER OCCUR TO YOU

{ That possibly some one might get up an Anti-Dial Combination Lock that was not a failure.  
That possibly this lock might be a good thing, after all.  
That possibly it might pay to at least send for a catalogue and prices.  
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## THE CRAIG LOCKS

Can Convince  
Will Convince  
Have Convinced

**HARDWARE MEN**

That they are good honest locks  
worthy of confidence.

We Guarantee Every Lock.

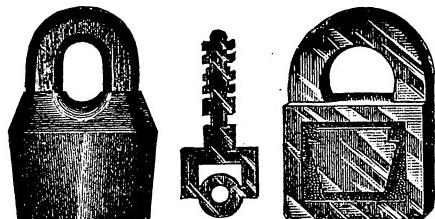
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**KEYSTONE LOCK WORKS,**

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E. T. FRAIM, Lancaster, Pa., U. S. A.  
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Patent Inter-Locking Tumbler Scandinavian or Jail PADLOCKS, in 56 grades and sizes. Key and Self-Locking, Brass, Bronze, Steel and Malleable Iron. Red, Black, Bower-Barf and Bright Brown finish. Also a full line of fine flat padlocks in Bronze and Steel. All fully described and illustrated in our new catalogue, furnished free to the trade.

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**CHAMPION METAL WINDOW  
SASH CHAINS**

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

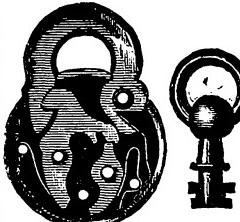
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**"THOMAS MORTON"**  
65 Elizabeth Street,  
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Write for Prices.

## PATENT PERFECTION PADLOCK

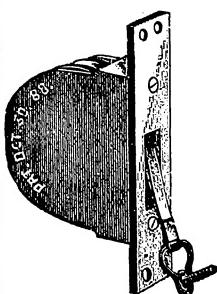
*Eight Tumblers. Key Turning Both Ways.*



Sizes;  $\frac{3}{8}$  inch to  $2\frac{1}{2}$  inches; of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also,  $\frac{3}{8}$  and  $\frac{5}{8}$  inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.

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Send for Price Lists and Circulars.



**Merit Always Wins.**

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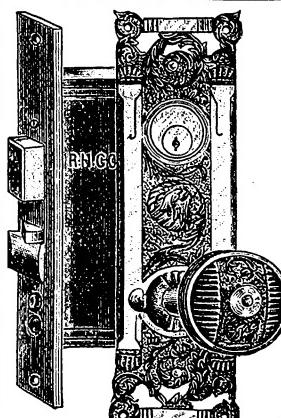
Has been the standard for five years.

Write for our new catalogue of Hardware Specialties.

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READING HARDWARE CO., Agents.

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73 Wabash Ave., Chicago.



## WORLD'S FAIR

visitors are invited to inspect our display of Art Hardware and

**"Vassar" Locks**

at 73 Wabash Avenue, Chicago.

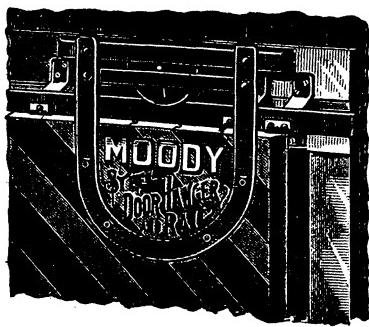
—Our "Columbian" Design —

is shown in the accompanying cut.

**READING HARDWARE COMPANY,**

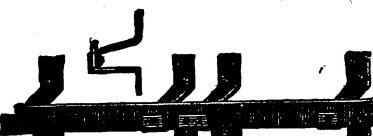
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NEW YORK, PHILADELPHIA, CHICAGO.

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Showing one-half set of hangers attached to door.

## STEEL RAIL.



The Only Bracing Bracket Made.

### PRICE-LIST.

	Per Doz. pr.
No. 5, to run 6 feet, 3½ in. wheel,	\$10.00
No. 6, to run 10 feet, 4½ in. wheel,	15.00
No. 7, to run 15 feet, 5½ in. wheel,	22.00
RAIL, per foot.....	6½ cents

## SOLID BRAIDED SASH CORDS, &c.

Picture Wire, Bright Wire Goods, Picture Nails,

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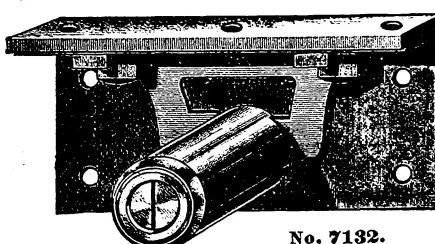
Mason Lines, Chalk Lines, Clothes Lines, Spool Wire,

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### THE "JACKSON" CHEST LOCK

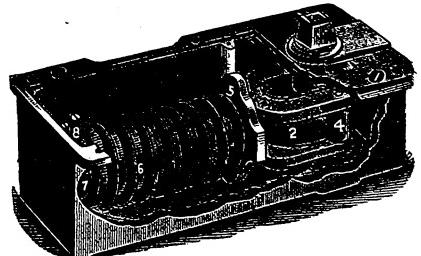
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Applied in floor under door. They close the door gently, without noise or violence and stop it at once at the centre. Doors cannot sag, springs do not break or set.

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Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their slot by throwing over the lever in slot of the handle.

The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer shank, with wood handle, and one socket



for drill shank and feed nut. The jaws on this wrench open from 3½ to 1¼ inches.

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SIMPLEST IN CONSTRUCTION.  
EASIEST FITTED.



Cheapest and Best Balance Made.

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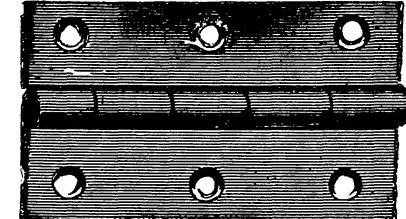
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#### "CONROY" Refrigerator Door Fasteners

Have rapidly supplanted all others.

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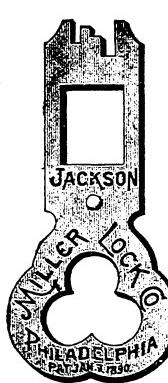
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Bumpers

Holds  
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For sale by all Jobbers. Write  
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One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

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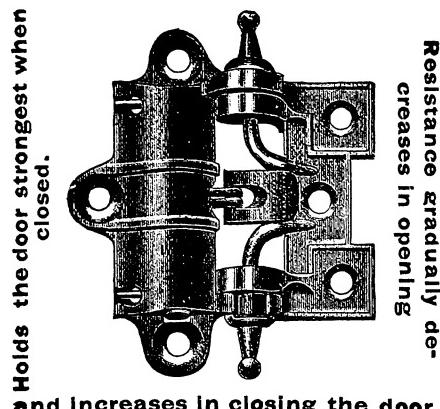
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Estimates cheerfully given. Send for Catalogue

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Will mark in ten minutes what would take five hours to do the old way, saving the price of it the first time used.

It always marks the centers accurately, so the pulleys are sure to fit and saving a great deal of refitting. They are simple, durable, handy, and sell at sight.

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Saves 2 cents a window in cost of material, saves time in putting on and makes a neater job than tying knots. Send for circulars and prices

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**Motley's Adjustable Sash Holder**

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All Tags and Labels on Covert Goods bear the above Trade-Mark, and are sold by all Leading Jobbers in General and Saddlery Hardware at Manufacturers' Prices.

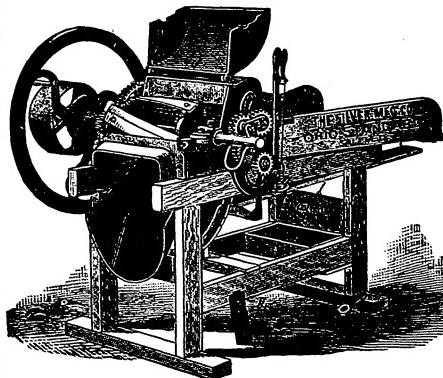
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**MARTY**RAT AND  
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PALMER HARDWARE MFG. CO., Troy, N. Y.

**WHY USE WOODEN OR HEAVY STEEL BLOCKS  
WHEN THE STEEL AND IRON  
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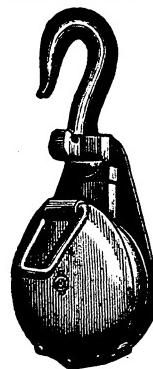
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ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

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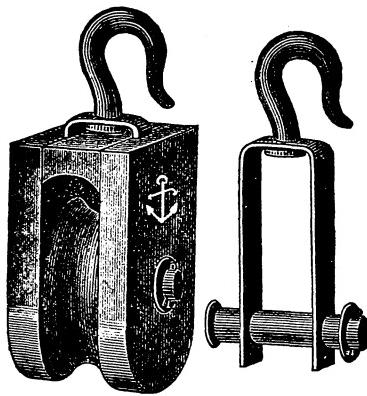
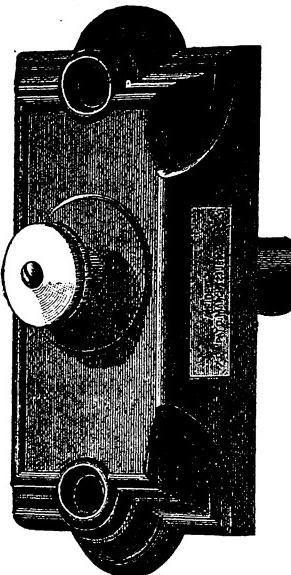
**Our Self-Oiling Blocks**

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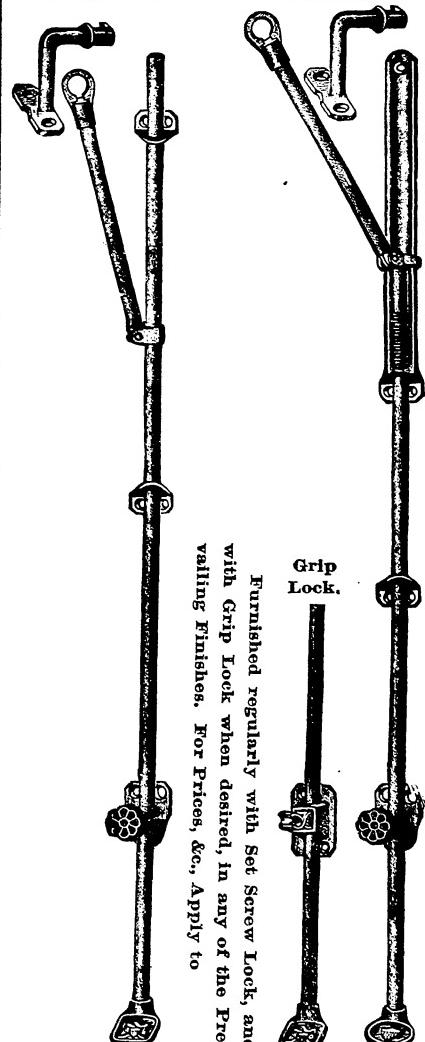
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No. 172 Lock.

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**TRANSOMLIFTERS****"EAGLE."****"SHIELD."**

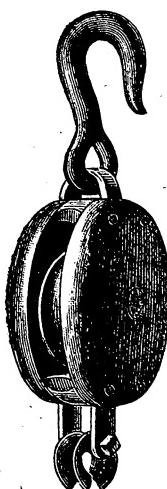
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Furnished regularly with Set Screw Lock, and with Grip Lock when desired, in any of the prevailing Finishes. For Prices, &c., Apply to

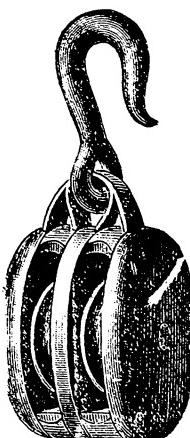
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WILL PROVE SATISFACTORY

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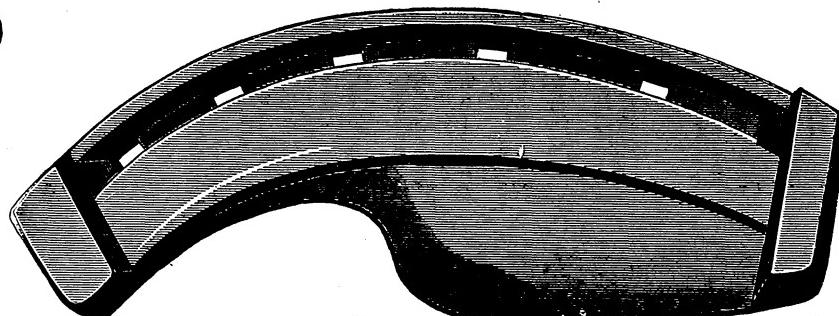
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**CARRIAGE HARDWARE AND**  
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Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.  
IT IS JUST RIGHT.

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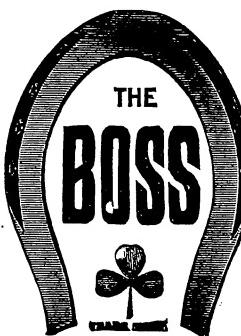
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JUST TRY THEM and YOU will say they excel all others.

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WITH STEEL SCREWS.

U. S. Standard.	Points Hardened.
No. Inch. Price.	No. Inch. Price.
1..... 36..... \$0 85	7..... 1 3/4..... \$1 00
2..... 36..... 35	8..... 2..... 1 10
3..... 34..... 60	9..... 2 1/2..... 1 40
4..... 1..... 60	10..... 3..... 1 50
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MANUFACTURE THE LARGEST VARIETY OF

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Of Best Material and Workmanship.

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All Sizes. All Patterns. All Warranted. Sold Everywhere.

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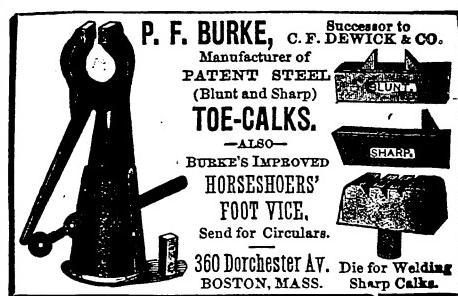
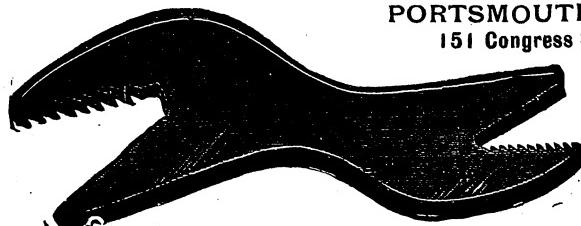
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all Departments of Woolen and  
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keepers, and in fact everybody  
that ever uses a wrench

NEEDS THIS ONE.



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## AXLEINE



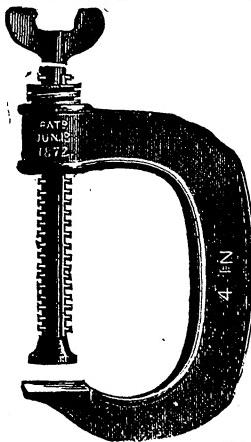
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Grease put up in square  
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one pound ; beautifully  
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PATENTED ARTICLES  
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**MALLEABLE IRON.**  
Hammer's Adjustable Clamps.



**Hammer's** Malleable Iron Oilers, 3 Sizes.  
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NEW pattern Heavy Screw Clamps.  
Strongest in the market.  
For sale by all the principal Hardware dealers.  
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**MALLEABLE IRON CASTINGS**  
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in Malleable Iron made to order.

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**BOLT CUTTERS**

AND NUT TAPPING MACHINES.

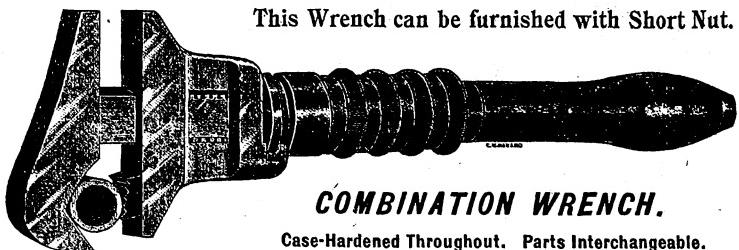
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LOCK-CORNER SHELF BOXES.  
Screw Cases, etc.  
FOR THE HARDWARE TRADE  
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**BERGER'S PATENT TRUCKS.**  
The Handiest, Cheapest and  
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Highest testimonials from those in  
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BERGER BROS.,  
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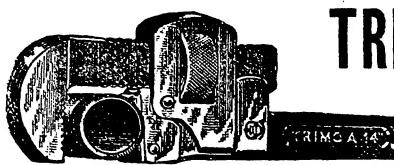
This Wrench can be furnished with Short Nut.

### COMBINATION WRENCH.

Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.  
For Circulars and Price-List, address

**BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass., U. S. A.**



### TRIMO PIPE WRENCH,

Forged Steel.

All parts Interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

**TRIMO**

**CHAIN**

**PIPE**

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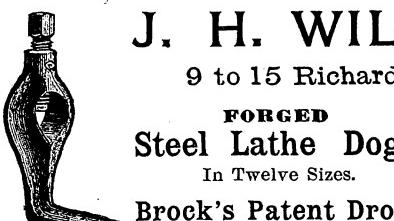


Superior in strength and ease of operation.  
COMPLETE circular grip. Never slips nor crushes.

Can be used with one hand and in closer quarters than any other Basin Wrench. Parts interchangeable.

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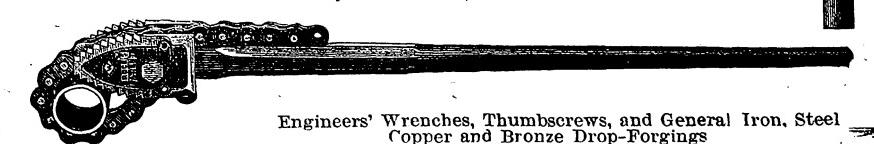
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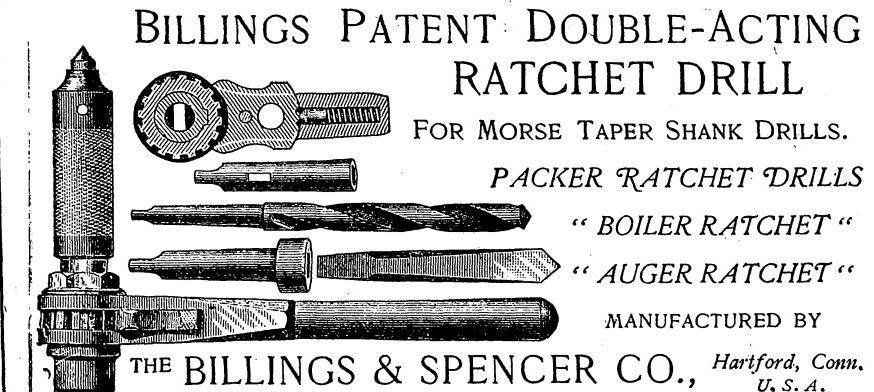
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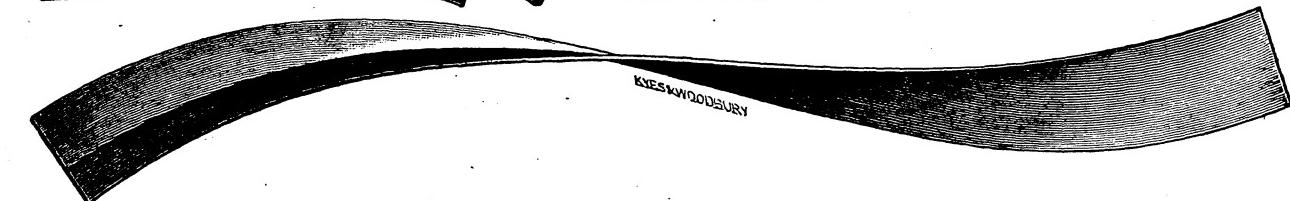
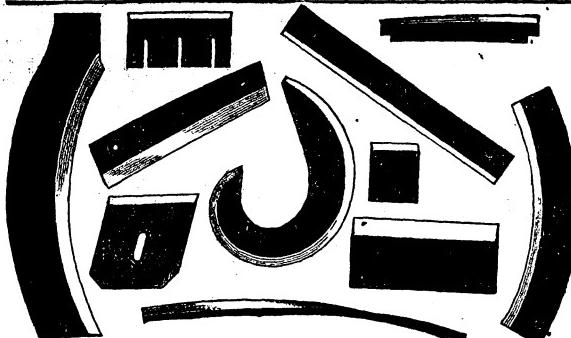
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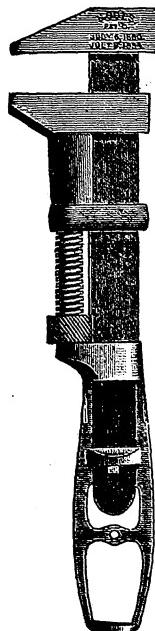
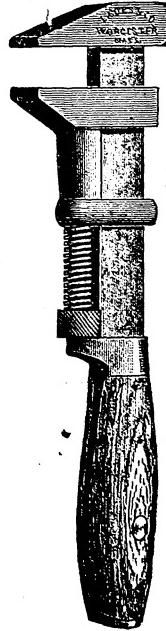
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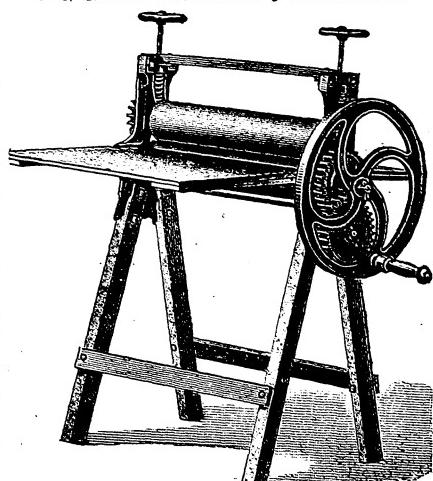
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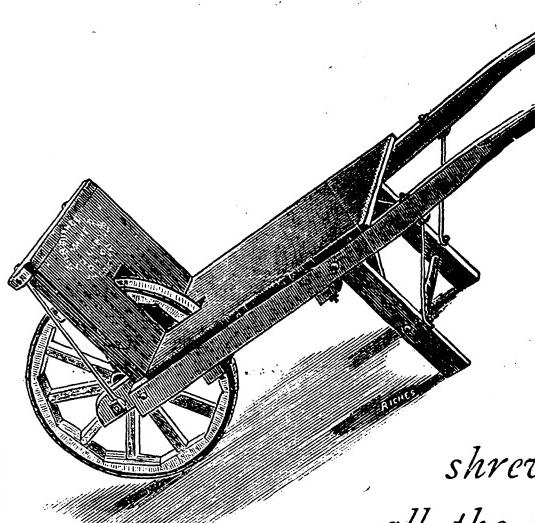
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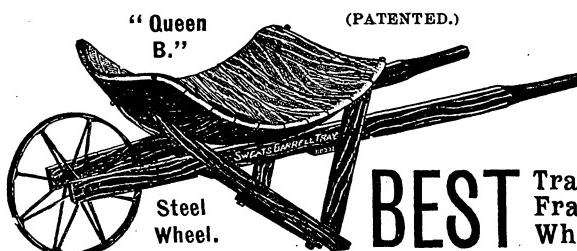
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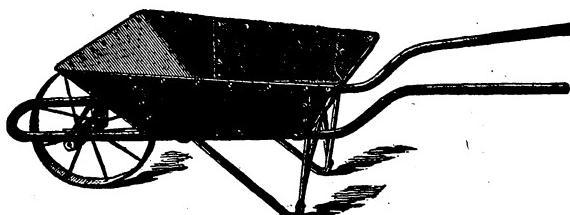
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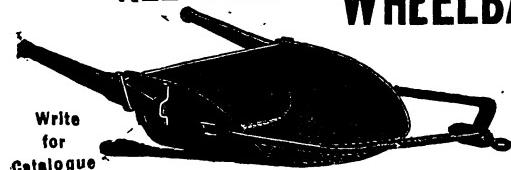
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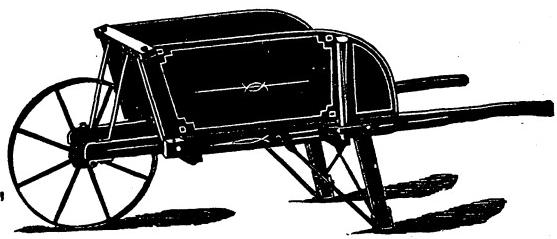


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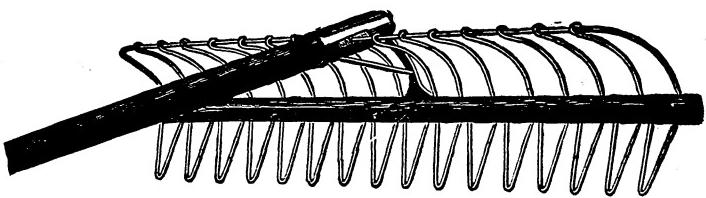
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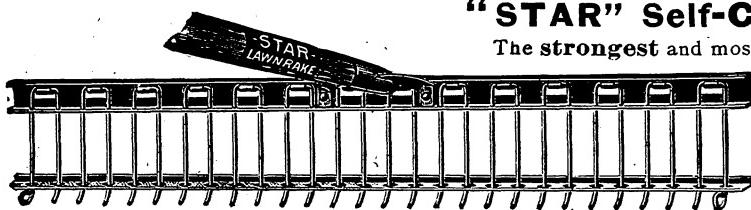
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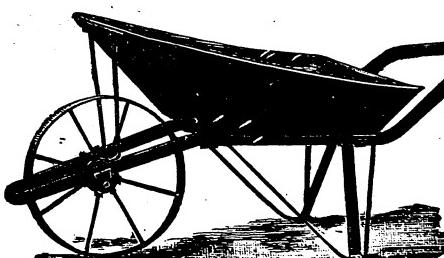
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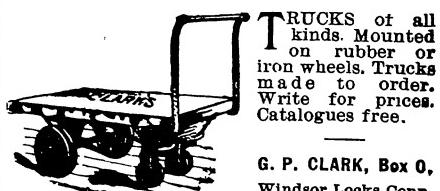
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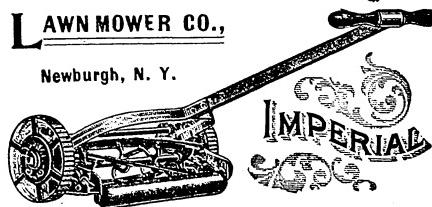
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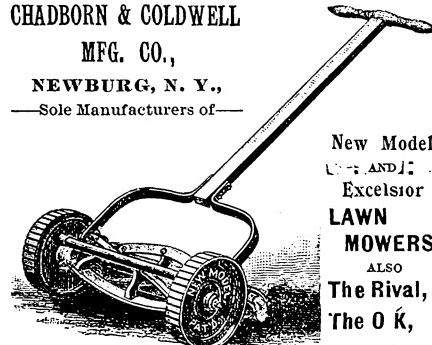
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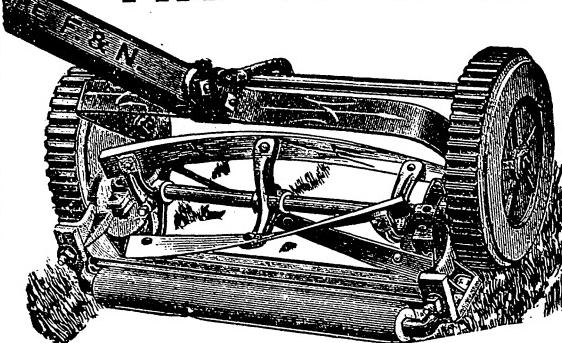
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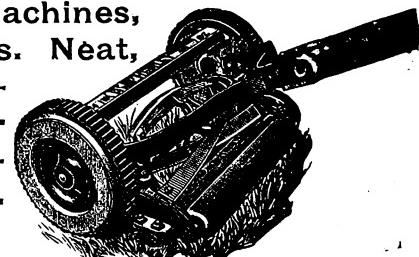
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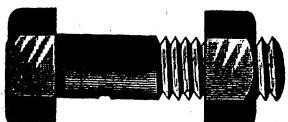
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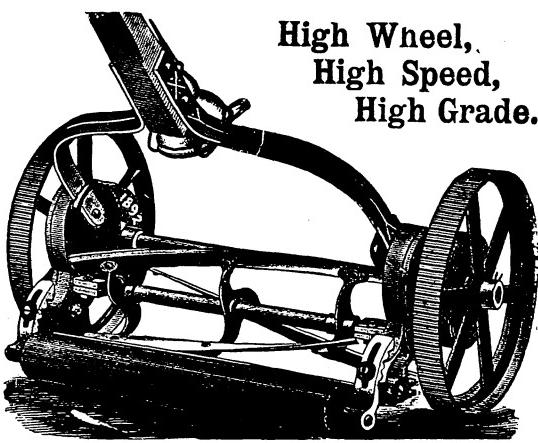
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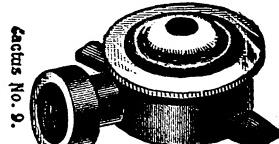
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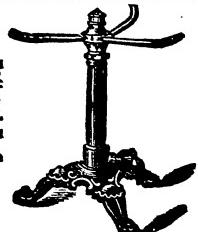
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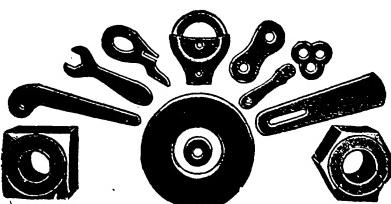
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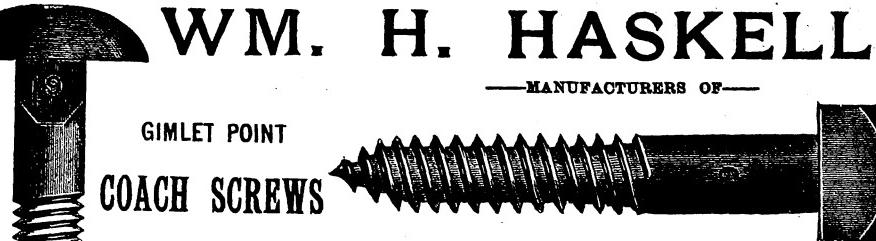
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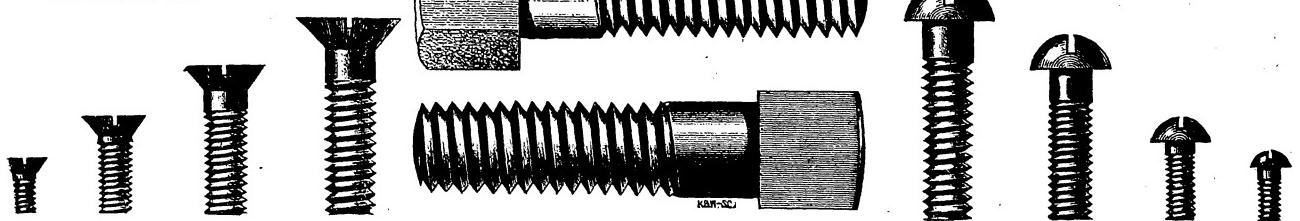
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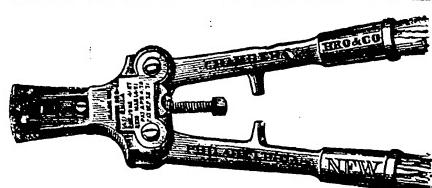


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Allentown Rolling Mill, Allentown, Pa.  
Burden Iron Co., Troy, N. Y.  
Crescent Horse Shoe & Iron Co., Max Meadows, Va.  
Montour Iron & Steel Co., Danville, Pa.  
Mahoning Valley Iron Co., Youngstown, Ohio.  
Sternbergh, J. H. & Son, Reading, Pa.

**Barrel Sw'ns.**

Leavitt Machine Co., Orange, Mass.

**Bellows, Manufacturers of.**

Bullock Bellows Co., Cleveland, O.  
Scott, Geo. M., Chicago, Ill.

**Bells.**

Bavin Bros., Mfg. Co., East Hampton.

**Belt Dressing.**

Jos. Dixon Crucible Co., Jersey City, N. J.

**Belt Fasteners.**

Bristol's Mfg. Co., Waterbury, Conn.  
Claden Mfg. Co., Cleveland, Ohio.  
Talcott, W. O., Providence, R. I.

**Beltting, Makers of.**

Alexander Bros., 412 N. 3d., Phila.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Engineering Co., Phila., Pa.  
Mata Belting Co., Philadelphia, Pa.  
N. Y. Belting & Packing Co., Ltd., N. Y.  
Roberts Mfg. Co., Pittsburgh, Pa.  
Shultz Belting Co., St. Louis, Mo.

**Bicycles.**

Bingham, W. Co., Cleveland, Ohio.  
Coventry Machinists Co., Ltd., Boston, Mass.  
Freeport Bicycle Mfg. Co., Freeport, Ill.  
Hubert Bros. & Co., 26 W. 23d St, N. Y.  
Lovell, Jno. P. Arms Co., Boston, Mass.

Parry Mfg. Co., Indianapolis, Ind.  
Pope Mfg. Co., Boston, Mass.  
Read, Wm. & Sons, Boston, Mass.  
Rouse-Durvea Cycle Co., Peoria, Ill.  
Toledo Bicycle Co., Toledo, O.  
Western Wheel Works, Chicago, Ill.

**Bit Gauge.**

Stringfellow, J. B. & Co., Pawtucket, R. I.

**Bits and Braces.**

Am. Bit Brace & Tool Co., Buffalo, N. Y.  
Bridgeport Gun Implement Co., 318-318 Broadway, N. Y.

**Blocks, Tackle, Makers of.**

Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.  
Cleveland Block Co., Cleveland, O.  
Fulton Iron & Engine Works, Detroit, Mich.

Shubert & Cottingham, Philadelphia, Pa.  
Toledo Block Works Toledo, O.

**Blowers.**

Buffalo Forge Co., Buffalo, N. Y.  
Champion Blower & Forge Co., Lancaster, Pa.

Starkevant, E. F. & Co., Boston, Mass.

**Boiler Makers' Rolls.**

New Doty Mfg. Co., Janesville, Wis.  
**Boiler Plates.**

Carbon Steel Co., Pittsburgh, Pa.  
McIlvain, Wm. & Sons, Reading, Pa.  
Lukens Iron & Steel Co., Coatesville, O.  
Pottstown Iron Co., Pottstown, Pa.

**Boilers, Copper.**

Randolph & Clowes, Waterbury, Conn.

**Boilers, Steam.**

Babcock & Wilcox Co., 30 Cortlandt, Edge Moor Iron Co., Wilmington.  
Phoenix Iron Works Co., Meadville, Pa.  
Pollock, W. B. & Co., Youngstown, O.  
Southwick Fdy. & Mch. Co., Phila., Pa.  
Wetherill, Robt. & Co., Chester, Pa.

**Bolt Cutters.**

Chambers Bros. Co., Philadelphia.  
Howard Iron Works, Buffalo, N. Y.  
Wells Bros. Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.

**Books.**

Lamberson, B., Portland, Ore.  
Marine Review, Cleveland, Ohio.  
Williams, David, 96-102 Reade St., N. Y.  
Wolfcott & West, Syracuse, N. Y.

**Box Banders.**

Goodell, J. W., Burlington, Vt.

**Boxes, Hdw., Shelf, &c.**

Green, A. H., 22 Park Place, N. Y.  
Jones, Jesse & Co., Philadelphia, Pa.

**Box Straps and Corners.**

Buffalo Specialty Mfg. Co., Buffalo, N. Y.

**Brake Shoes.**

Sargent Co., Chicago, Ill.

**Brass, Manufacturers of.**

Ansonia Brass & Copper Co., N. Y.  
Davol, John & Sons, 100 John, N. Y.  
Holmes, Booth & Haydens, N. Y.  
Plume & Atwood Mfg. Co., N. Y.  
Randolph & Clowes, Waterbury, Conn.  
Scovill Mfg. Co., Waterbury, Conn.

Waterbury Brass Co., 296 B'way, N. Y.

**Brass Butt Hinges.**

Tiebout, W. & J., 16 & 18 Chambers.

**Brass Founders.**

Best Fox & Co., Pittsburgh, Pa.  
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.  
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.

Emory, P. P. Mfg. Co., Springfield, Mass.

**Brass Goods.**

Brass Goods Mfg. Co., 88 Chambers,

**Brass Knives.**

Christy Knife Co., Fremont, O.

**Bridge Builders.**

Berlin Iron Bridge Co., East Berlin, Ct.  
Boston Bridge Works, Boston, Mass.  
Wrought Iron Bridge Co., Canton, O.

**Bronze (Tobin).**

Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.

**Builders' Hardware.**

Deitz, A. E., 97 Chambers St., N. Y.  
Reading Hdw. Co., Reading, Pa.  
Yale & Towne Mfg. Co., Stamford, Ct.

**Butcher and Shoe Knives, Manufacturers of.**

Chatillon, John & Sons, 85-89 Cliff St., N. Y.

Goodell Co., Antrim, N. H.

Wilson, John, Sheffield, England.

**Butts and Hinges.**

McKinney Mfg. Co., Alleghany, Pa.  
Sabin Machine Co., Montpelier, Vt.  
Stanley Works, New Britain, Conn.  
Tiebout, W. & J., 16 Chambers, N. Y.

**Calipers and Dividers.**

J. Stevens Arms and Tool Co., Chicopee Falls, Mass.  
Starrett, L. S., Athol, Mass.

**Can Makers' Tools and Machines.**

Niagara Stamping and Tool Co., Buffalo, N. Y.

**Car Axles.**

Roberts, A. & P. & Co., Phila.

**Carboy Stands.**

Hillebrand & Wolf, Philadelphia, Pa.

**Car Wheels.**

Whitney, A. & Sons, Phila.

**Carriage Hardware, Makers of.**

Covert's Saddlery Works, Farmer, N. Y.  
Eccles, Richard, Auburn, N. Y.  
Scranton Forging Co., Scranton, Pa.  
Smith, H. D. & Co., Plantsville, Conn.  
Wilcox & Howe Co., Birmingham, Conn.

**Cartridge Reloading Tools.**

Idem Mfg. Co., New Haven, Conn.

**Casters, Wheel, &c.**

Clark, G. P., Windsor Locks, Conn.

**Castings, Iron and Steel.**

Ames Sword Co., Chicopee, Mass.  
Arcade Malleable Iron Co., Worcester Mass.

Aschman Steel Casting Co., Thurlow, Pa.

Booth, The Lloyd, Co., Youngstown, O.  
Burgess & Loxley, Buffalo, N. Y.

The Burr & Houston Co., Brooklyn, N. Y.  
Cambria Steel-Cambria Iron Co., Johnstown, Pa.

Cheney, S. & Son, Manlius, N. Y.  
Chester Steel Casting Co., Phila., Pa.

Chrome Steel Works, Brooklyn, N. Y.  
Ettie & Henger Mfg. Co., St. Louis, Mo.  
Eureka Cast Steel Co., Chester, Pa.

Flagg, Stanley G. & Co., Phila.  
Haight & Clark, Albany, N. Y.  
Hammer & Co., Branford, Conn.  
Herrick, J. A., 284 Pearl St., N. Y.

Johnson Foundry Co., Johnstown, Pa.  
Johnson, L. G. & Co., Spuyten Duyvil, Mahoning Fdy. & Mch. Co., Danville, Pa.  
Northwestern Malleable Iron Co., Milwaukee, Wis.

Palmers & De Mooy, Cleveland, O.  
Passaic Art Casting Co., Passaic, N. J.  
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.

Sargent Co., Chicago, Ill.  
Sessions Foundry Co., Bristol, Conn.  
Spencer's, I. S. Sons, Guilford, Conn.  
Standard Fdy. & Mfg. Co., Cleveland, O.  
Standard Steel Casting Co., Thurlow, Pa.

Taylor Iron & Steel Co., High Bridge, N. J.  
Totten & Hogg Iron & Steel Fdy. Co., Pittsburgh, Pa.

Trenton M. Al. Iron Co., Trenton, N. J.  
Union Mfg. Co., 103 Chambers St., N. Y.  
West Coxsackie Iron Fdy., Coxsackie, N. Y.

Wetherill, Robt. & Co., Chester, Pa.  
Wrenn, Whitehurst & Co., Norfolk, Va.

**Chains.**

Bradlee & Co., Philadelphia.  
Bridgeport Chain Co., Bridgeport, Conn.  
Link-Belt Engineering Co., Phila., Pa.  
McKay, Jas. & Co., Pittsburgh, Pa.

**Cherry Stoners.**

Goodell Co., Antrim, N. H.

**Chimneys.**

Phila. Engineering Works, Phila., Pa.

**Chisels, Manufacturers of.**

Buck Bros., Millbury, Mass.  
White, L. & I. J. Co., Buffalo, N. Y.

**Chucks.**

Cushman Chuck Co., Hartford, Conn.  
Hoggson & Petrus Mfg. Co., New Haven, Conn.  
Horton, H. & Sons Co., Windsor Locks, Conn.

**Smith & Egge Mfg. Co., Bridgeport.**

Skinner Chuck Co., New Britain, Conn.  
Union Mfg. Co., 103 Chambers, N. Y.  
Whiton, D. E. Mach. Co., New London, Conn.

**Clamps.**

Hammer & Co., Branford, Conn.  
Le Count, C. W., So. Norwalk, Conn.

**Clipping Machines.**

Hotchkiss, E. S., Bridgeport, Conn.  
McCoy, Jos. F. & Co., 26 Warren St.

**Coal.**

Barns, C. K. & Co., Philadelphia, Pa.  
Wister, Francis, Philadelphia, Pa.

**Coke.**

Barns, C. K. & Co., Philadelphia, Pa.  
Houston, C. B. & Co., Philadelphia, Pa.  
Rainey, W. J., Cleveland, O.

Sibell, Geo. H. & Co., Chicago, Ill.  
Wister, Francis, Philadelphia, Pa.

**Collections.**

Hardware Board of Trade (Limited)  
& 6 Warren, N. Y.

**Colleges.**

Rose Polytechnic Institute, Terre Haute, Ind.

**Condensers.**

Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

**Conveying Machinery.**

Brown Holsting & Conveying Machine Co., Chicopee Falls, Mass.  
Jeffrey Mfg. Co., Columbus, O.

Link Belt Engineering Co., Phila., Pa.

**Cylinders and Dividers.**

J. Stevens Arms and Tool Co., Chicopee Falls, Mass.

Starrett, L. S., Athol, Mass.

**Copper.**

Ames Sword Co., Chicopee, Mass.  
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.

Hendricks Bros., 49 Cliff, N. Y.

New Haven Copper Co., 294 Pearl, N. Y.

Randolph & Clowes, Waterbury, Conn.

Wister, Francis, Philadelphia, Pa.

**Coppersmith.**

Emory, P. P. Mfg. Co., Springfield, Mass.

**Cordage.**

Samson Cordage Works, Boston, Mass.

**Cork Screws.**

Detroit Cork Screw Co., Detroit, Mich.

Williamson, C. T. Wire Novelty Co., Newark, N. J.

**Corn Huskers.**

Hall & Ross Husking Glove Co., Chicago, Ill.

Perkins, H. H. Mfg. Co., Kewanee, Ill.

**Corrugated Furnaces.**

Continental Iron Wks., Brooklyn, N. Y.

**Corrugated Iron.**

Cambridge Roofing Co., Cambridge, O.

Moseley Iron Bridge & Roof Co., 6 Day N. Y.

**Counting Machines.**

Durant, W. N., Milwaukee, Wis.

Osborn, G. Edw. & Co., New Haven, Ct.

**Coupling.**

Almond, T. R., Brooklyn, N. Y.

**Coverings, Boiler and Pipe.**

Johns, H. W. Mfg. Co., 87 Maiden Lane.

**Cranes.**

Detroit Found

**Drap Presses.**

Biss, E. W., Co., Brooklyn, N. Y.  
 Crosby, G. A. & Co., Chicago, Ill.  
 Eaton, Geo. H. & Co., Boston, Mass.  
 Miner & Peck Mfg. Co., New Haven, Conn.  
 Stiles & Parker Press Co., Brooklyn, N. Y.  
 Vulcan Iron Works, Chicago, Ill.  
 Waterbury Barrel Foundry and Machine Co., Waterbury, Conn.

**Dumb Waiters.**

Storm Mfg. Co., Newark, N. J.

**Dust Beaters.**

Peabody & Parks, Troy, N. Y.

**Dynamite.**

New York Powder Co., 82 Liberty St., N. Y.

**Dynamos.**

C. & C. Electric Motor Co., 402 and 404 Greenwich St., N. Y.  
 Detroit Dynamo Co., Detroit, Mich.  
 Lovell Mfg. Co., Erie, Pa.  
 Zucker & Levett Chemical Co., 14 Grand St., N. Y.

**Edge Tools. Makers of.**

Suck Bros., Millbury, Mass.  
 Butcher, W. & S., 135 Duane St., N. Y.  
 Buffalo Edge Tool Wks., Buffalo, N. Y.  
 Plumb, Fayette R., Philadelphia, Pa.  
 White, L. & J. Co., Buffalo, N. Y.

**Egg Beaters.**

North Bros. Mfg. Co., Philadelphia.

**Electric Bells and Supplies.**

Ostrander, W. R. & Co., 204 Fulton St., New York  
 Wollensak, J. F., Chicago, Ill.

**Electric Welding.**

Thomson Electric Welding Co., Boston, Mass.

**Electro-Platers.**

Boardman, L. & Son, East Haddam Ct.  
**Elevators. Makers of.**

Link-Belt Engineering Co., Phila., Pa.  
 Moline Elevator Co., Moline, Ill.

Morse, Williams & Co., Phila., Pa.

Salem Fdry & Mch. Co., Salem, Mass.

**Emery and Emery Wheels.**

Bell, Geo. E., 36 John St., N. Y.  
 Grant Corundum Wheel Mfg. Co., Worcester, Mass.

Michigan Emery Wheel Co., Detroit, Mich.

N. Y. Belting & Packing Co., Ltd., N. Y.  
 Northampton Emery Wheel Co., Leeds, Mass.

Norton Emery Wheel Co., Worcester, Mass.

Springfield Emery Wheel Mfg. Co., Bridgeport, Conn.

Sterling Emery Wheel Co., 174 Fulton St., New York.

**Enamels.**

Nubian Iron Enamel Co., Cragin, II.  
**Engineers and Contractors.**

Aiken Henry, Pittsburgh, Pa.

Artificial Gas Engineering Co., Pittsburgh, Pa.

Carter, Henry J., Pittsburgh, Pa.

Herrick, J. S., 284 Pearl St., N. Y.

Kennedy, Julian, Pittsburgh, Pa.

Laughlin, Alex. & Co., Pittsburgh, Pa.

Lean, D. R. Co., Pittsburgh, Pa.

McClure, Amherst & Co., Pittsburgh, Pa.

Pittsburgh Iron & Steel Engineerin' Co., Pittsburgh, Pa.

Roberts, Frank C., Philadelphia, Pa.

Smythe, S. R. Co., Incorporated Pitts-

Swindell, W. & Bros., Pittsburgh, Pa.

Wilkie, Bothwell & Co., Ltd., Pitts-

burgh, Pa.

Witherow, Jas. P. Co., Pittsburgh, Pa.

**Engines. Gas.**

Otto Gas Engine Works, Phila., Pa.

Rollason Gas Engine, Havemeyer Bldg., N. Y.

**Engines. Steam. Makers of.**

Bass Foundry & Machine Works, Ft. Wayne, Ind.

Buckeye Engine Co., Salem, O.

Erie Engine Works, Erie, Pa.

Leffel W. C. Co., Springfield, O.

Norwalk Iron Works Co., So. Norwalk, Conn.

Phoenix Iron Wks. Co., Meadville, Pa.

Southwark Foundry and Machine Co., Phila., Pa.

Tod, William & Co., Youngstown, O.

Wetherill, Robt. & Co., Chester, Pa.

**Exhaust Tumblers.**

Sweeter, W. A., Brockton, Mass.

**Expansion Bolts.**

Boone, W. C. Mfg. Co., Boonton, N. J.

Church, Isaac, Toledo, O.

**Faucets. Self-Measuring.**

Lane Bros., Poughkeepsie, N. Y.

**Faucets. Wooden. Makers of.**

Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.

John Sommers' Son, Newark, N. J.

**Feed-Water Heaters.**

Davis, I. B. & Son, Hartford, Conn.

Goubert Mfg. Co., 32 Cortlandt St., N. Y.

National Pipe Bending Co., New Haven, Conn.

Webster, Warren & Co., Phila., Pa.

Whitlock Coll Pipe Co., Elmwood, Conn.

**Fencing. Iron and Wire.**

Barnum, E. T., Detroit, Mich.

Champion Iron Co., Kenton, O.

Clinton Wire Cloth Co., Clinton, Mass.

DeKalb Fence Co., DeKalb, Ill.

Gilbert & Bennett Mfg. Co., 42 Cliff St., Hartman Mfg. Co., Beaver Falls, Pa.

Kilmer Mfg. Co., Newburgh, N. Y.

Mast, Foss & Co., Springfield, O.  
 The Van Dorn Iron Works Co., Cleveland, O.

Reliance Wire & Iron Wks., Milwaukee

'iles, Importers of

Moss, F. W., 80 John, N. Y.

'iles and Rasps, Manufacturers of

Banker & White, Troy, N. Y.

Barnett, G. & H., 41 & 48 Richmond

Phil.

Butcher, W. & S., 135 Duane St., N. Y.

McCaffrey File Co., Philadelphia.

Nicholson File Co., Providence R. I.

'ire Brick. Makers of.

Borgner, Cyrus, Philadelphia, Pa.

Gardiner, Jas. & Son, Cumberland, Md.

Treisacher & Sons, 100 E. Houston, St.

McLeod & Henry Co., Troy, N. Y.

Maurel, H. & Son, 420 E. 23d, N. Y.

Ostrander Fire Brick Co., Troy, N. Y.

Presbrey Stove Linning Co., Taunton,

Mass.

Valentine, M. D. & Bro., Woodbridge,

Fire Sets.

Troy Nickel Works, Troy, N. Y.

'ishing Tackle.

Dame, Stoddard & Kendall, Boston, Mass.

'lent and Emery Paper.

Baeder, Adamson & Co., Phila., Pa.

Fly Cleaners.

Mackey, Jas. T. St. Louis, Mo.

Fly Fans.

Matthai, Ingram & Co., Baltimore, Md.

Fodder Cutters.

Silver Mfg. Co., Salem, O.

Forges, Portable, &c.

Bradley & Co., Syracuse, N. Y.

Bullock Bellows Co., Cleveland, O.

Buffalo Forge Co., Buffalo, N. Y.

Champion Blower & Forge Co., Lancaster, Pa.

Empire Portable Forge Co., Lansingburg, N. Y.

Sturtevant, B. F. Co., Boston, Mass.

Forgeings, Iron and Steel.

Bethlehem Iron Co., S. Bethlehem, Pa.

Cambridgeshire—Cambridge Iron Co., Johnstown, Pa.

Scranton Forging Co., Scranton, Pa.

'ountry Facings.

Chicago Fdy. Supply Co., Chicago, Ill.

MacKellar Foundry Facing & Supply

Co., Quincy, Ill.

Parxon, J. W. & Co., Phila.

S. Obermayer Co., Cincinnati, O.

Smith, J. D. Fdy. Supply Co., Cinn., O.

Whitehead Bros. Co., 517 W. 15th St.,

'ountry Heddles.

Este, W. S., 65 Fulton, N. Y.

'ountry Supplies.

Chicago Fdy. Supply Co., Chicago, Ill.

Collatt, Victor, Detroit, Mich.

MacKellar Fdy. Facing & Supply Co., Quincy, Ill.

S. Obermayer Co., Cincinnati, O.

Parxon, J. W. & Co., Philadelphia.

Smith, J. D. Fdy. Supply Co., Cinn., O.

Whitehead Bros. Co., 517 W. 15th St.,

'lection Clutches.

Keystone Clutch & Mch. Wks., Phila., Pa.

Moore & White Co., Philadelphia, Pa.

Fruit Presses.

Enterprise Mfg. Co., Philadelphia, Pa.

Fuel Burners.

Collins, W. S., 46 Drexel Bldg., N. Y.

Garden Tools.

Noyes, B. B. & Co., Greenfield, Mass.

Gas Producers.

Wood, R. D. & Co., Philadelphia, Pa.

Gas & Steam Fitters' Supplies.

Pancoast & Maule, Phila., Pa.

Gauge, Rolling Mill.

Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.

D. E. Whitton Mach. Co., New London, Conn.

Gears.

Boston Gear Works Boston Mass.

Gleason Tool Co., Rochester, N. Y.

New Process Raw Hide Co., Syracuse, N. Y.

Poole, Robt. & Son Co., Baltimore, Md.

Union Fdy. & Mch. Co., Pittsburgh, Pa.

Glass Tubes.

Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glass Cutters.

Monce, S. G., Bristol, Conn.

Glue.

Baeder, Adamson & Co., Phila., Pa.

Russia Cement Co., Gloucester, Mass.

Grass Catchers.

Cleveland Novelty Co., Cleveland, O.

Supplice Hardware Co., Phila., Pa.

Grinding and Polishing Ma-

chines.

Norton Emery Wheel Co., Worcester, Mass.

Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery.

Blake & Johnson, Waterbury, Conn.

Grindstones.

Cleveland Stone Co., Cleveland, O.

Euron Grindstone Co., Port Austin, Mich.

Gunpowder, Makers of.

Lafin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.

Lansing Wheelbarrow Co., Lansing, Mich.

Insurance, Boiler.

Hartford Steam Boiler Inspection &

Insurance Co., Hartford, Conn.

Halter Chains.

Kelle & Woolworth, Niagara Falls, N. Y.

Handles.

New Process Raw Hide Co., Syracuse, N. Y.

New York Mallet and Handle Wks.

456 E. Houston St., N. Y.

Hangers, Door.

Lane Bros., Poughkeepsie, N. Y.

Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.

Doscher, Martin, 88 Chambers, N. Y.

Field, Alfred & Co., 93 Chambers St., N. Y.

Graham, John H. & Co., 111 Chambers St., New York.

Jacobus, W. H., 90 Chambers, N. Y.

Jacobus, W. H., & Co., Stamford, Conn.

Hardware Manufacturers.

Hotchkiss, E. S., Bridgeport, Conn.

Stearns, E. C. & Co., Syracuse, N. Y.

Union Mfg. Co., 108 Chambers, N. Y.

Yale & Towne Mfg. Co., Stamford, Conn.

Holiday Chain Co., New Haven, Conn.

**Machinery.**

Am. Tool Works, Cleveland, Ohio.  
Barnes, W. F. & John, Rockford, Ill.  
Becker, Jno. Mfg. Co., Fitchburg, Mass.  
Bement, Miles & Co., Philadelphia, Pa.  
Sigelow, C. E., 45 Dey, N. Y.  
Bignal & Keeler Mfg. Co., St. Louis,  
Birmingham Iron Foundry, Birmingham,  
Conn.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Bogert, Jno. L., Flushing, N. Y.  
Bradford Mill Co., Cincinnati, Ohio  
Briggs, Marvin, 12 Broadway, N. Y.  
Brown & Sharpe Mfg. Co., Providence,  
R. I.  
Carlton's Sons, Thos., Allegheny, Pa.  
Cinn. Milling Mch. Co., Cincinnati  
Ohio.  
Clapp, Geo. M., ast., 74 Cortlandt, N. Y.  
Coulter & McKenney Mch. Co., Bridge-  
port, Conn.  
Crukshank, D. B., Providence, R. I.  
Detrick & Harvey Mch. Co., Ba-  
more, Md.  
Ehrhardt, Gustave & Sons Pittsburgh,  
Pa.  
Fitchburg Mch. Works, Fitchburg,  
Mass.  
Gavin, Mch. Co., Laight & Canal Sts.  
Gould & Eberhardt, Newark, N. J.  
Hamilton Mch. Tool Co., Hamilton,  
O.  
Harrington, E. Son & Co., Phila., Pa.  
Hender Machine Co., Torrington, Ct.  
Hill, Clarke & Co., Boston, Mass.  
Ingersoll Milling Machine Co., Rock-  
ford, Ill.  
Johnson, Israel H., Jr., & Co., Phila.  
Jones & Lamson Mch. Co., Springfield,  
Vt.  
Kelly, Daniel, Phila., Pa.  
Lodge & Davis Mch. Tool Co., Cincin-  
nati, O.  
Lodge & Shipley Mch. Tool Work,  
Cincinnati, O.  
Lovegrove & Co., Philadelphia, Pa.  
McCabe, J. J., 68 Cortlandt, N. Y.  
Machinists Supply Co., Rochester, N. Y.  
Manville, E. J. Mch. Co., Waterbury,  
Conn.  
Morton Mfg. Co., Muskegon Heights,  
Mich.  
Newark Mch. Tool Works, Newark, N. J.  
New Haven Mfg. Co., New Haven, Conn.  
New York Machy's Depot, N. Y.  
Niles Tool Wks., 188 Library St., N. Y.  
Pedrick & Aver, Philadelphia, Pa.  
Pittsburgh Mfg. Co., Pittsburgh, Pa.  
Place, Geo., 120 Broadway, N. Y.  
Poole, Robt. & Son Co., Baltimore, Md.  
Powell Planer Co., Worcester, Mass.  
Pratt & Whitney Co., Hartford, Conn.  
Prentiss Tool & Supply Co., N. Y.  
Scranton Supply & Mohr. Co., Scrat-  
ton, Pa.  
Sellers, Wm. & Co., Phila.  
Seyfert's Sons L. F., Philadelphia, Pa.  
Stepto, J. & Co., Cincinnati, O.  
Stow Flexible Shaft Co., Ld., Phila.  
Toomey, Frank, Philadelphia, Pa.  
Wetherill, Robert & Co., Chester, Pa.  
Wilson, W. A., Rochester, N. Y.  
Woodruff Mfg. Co., Hartford, Conn.

**Machinery for Hardware Man-  
ufacture.**

Adt, Jno. & Son, New Haven, Conn.

**Machine Knives.**

Loring Coes & Co., Worcester, Mass.

**Machine Tools.—See machinery.****Machine Work.**

Tapping, J., 55th St., & 11th Ave., N. Y.

**City.****Machinists' Scales.**

Coffin & Leighton, Syracuse, N. Y.

Starrett, L. S., Athol, Mass.

**Machinists' Tools and Supply**

Brown & Sharpe Mfg. Co., Provident,

King, J. M. & Co., Waterford, N. Y.

Sellers, Wm. & Co., Inc., Phila.

**Mallets.**

N. Y. Mallet & Handle Works, N. Y.

**Manufacturing Sites.**

Kokomo Enterprise Co., Kokomo, Ind.

**Measuring Tapes.**

Lufkin Rule Co., Saginaw, Mich.

**Meat Cutters.**

Enterprise Mfg. Co., Philadelphia, Pa.

**Mechanical Drawing.**

Correspondence School of Mechanics

Scranton, Pa.

**Metals.**

Fearing, Wm. S., 100 Chambers, N. Y.

Hendricks Bros., 49 Cliff, N. Y.

Naylor & Co., 45 Wall, N. Y.

**Metal Brokers.**

American Metal Co., N. Y.

**Metallurgists.**

Britton, J. Blodgett, Phila.

**Metal Saws.**

Ehrhardt, Gustave & Sons, Pittsburg,

& C. Co., Chicago, Ill.

**Milling Machines.**

Brown & Sharpe, Providence, R. I.

Cin. Milling Mch. Co., Cincinnati,

Ohio.

Ingersoll Milling Machine Co., Rock-

ford, Ill.

Pedrick & Aver, Phila. Pa.

**Mincing Knives.**

Palmer Hdw. Mfg. Co., Troy, N. Y.

**Mine Lamps.**

Derby, Edw. & Sons Phila. Pa.

Leonard, B. E., Scranton, Pa.

Leonard, T. F., Scranton, Pa.

**Mining Screens.**

Harrington & King Perforating Co.

Chicago, Ill.

Howard & Morse, 45 Fulton, N. Y.

**Mirrors.**

Rice, C. F., Chicago, Ill.

**Model Work.**

Am. Vending Mch. Co., 29 Murray, N. Y.

**Molding Sand.**

Chicago Foundry Supply Co., Chicago,

Ill.

Obermeyer, S. Co., Cincinnati, O.

Parson, J. W. & Co., Phila.

Whitehead Bros. Co., 517 W. 16th St.

N. Y.

**Rotors, Water and Electric.**

C. & C. Electric Motor Co., 402 and  
404 Greenwich St., N. Y.

Dallett, Thos. H. & Co., Phila., Pa.

Thomson, Houston Motor Co., Boston,  
Mass.

**Sail Machinery.**

Pittsburgh Mfg. Co., Pittsburgh, Pa.

**Walls (Cut) and Spikes.**

Borden & Lovell, 70 West, N. Y.

Cumberland Nail & Iron Co., Phila.

Oxford Iron Co., 81 Washington,

Pottstown Iron Co., Pottstown,

Riverside Iron Wks., Wheeling, W. Va.

**Nickel Platers' Supplies.**

Zucker & Levens' Chemical Company,

10 to 14 Grand St., N. Y.

**Terway Shapes, Rollers of.**

Bowlard, William & Harvey, Fran-

ford, Philadelphia

**Net Machines.**

Dunham Nut Mch. Co., Unionville, Ct.

**Nuts, Bolts, &c., Makers of.**

American Bolt Co., Lowell, Mass.

American Screw Co., Providence, R. I.

Blake & Johnson, Waterbury, Conn.

Gaskell, Wm. H. Co., Pawtucket, R.

Mt. Carmel Bolt Co., Mt. Carmel, Conn.

Port Chester Bolt & Nut Co.,

Chester, N. Y.

Russell, Burdiss & Ward, Port Chester,

Sternberg, J. H. & Son, Reading, Pa.

Wilson, J. Fred, Worcester, Mass.

Wm. H. Haskell Co., Pawtucket, R.

**Oil Stones.**

Pike Mfg. Co., PikeStation, N. H.

**Oil Stoves.**

Grazier Stove Co., Chelsea, Mich.

**Ores.**

Winter, Francis, Philadelphia, Pa.

**o' Shees.**

Scranton Forging Co., Scranton, Pa.

**oaking.**

Billington, Jas. H. & Co., Phila., Pa.

Morrison, Robt., St. Louis, Mo.

N. Y. Belting & Packing Co. Ltd., N. Y.

**addecks.**

Ames Sword Co., Chicopee, Mass.

Frost, E. T., Lancaster, Pa.

Hillebrand & Wolf, Phila., Pa.

Miller Lock Co., Philadelphia, Pa.

**min.**

Detroit Granite Mfg. Co., Detroit, Mich.

Dixon Jos. Crucible Co., Jersey City, N. J.

**aint Burners.**

Dangler Stove & Mfg. Co., Cleveland, O.

**atent Solicitors.**

Fitzgerald, S. C., Washington, D. C.

Hosnow & Bowson, Phila. & Washg'ton.

Jenner, H. W. T., Washington, D. C.

Stocking, E. B., Washington, D. C.

**erforated Metal.**

Clinton Wire Cloth Co., Clinton, Mass.

Harrington & King Perforating Co.,

Chicago, III.

**ospher Bronze.**

Phosphor Bronze Smelting Co., Lim-

ited, 512 Arch, Philadelphia.

**ospher Tin.**

Crescent Phosphorized Metal Co.,

Philadelphia, Pa.

Crosby Steam Gauge & Valve Co., Bos-

ton, Mass.

Halk & Naumann, 516 Pearl, N. Y.

**icks and Mattocks.**

Plumb, Fayette R., Philadelphia, Pa.

**'ig Iron.**

Houston, C. B. & Co., Philadelphia, Pa.

Mann, Edwin R., Philadelphia, Pa.

Montour Iron & Steel Co., Danville, Pa.

Naylor & Co., 45 Wall, N. Y.

Pickands, Brown & Co., Chicago, Ill.

Pilling & Crane, Philadelphia, Pa.

Samuel, Franklin, Philadelphia, Pa.

**ig Iron Storage.**

Am. Pig Iron Storage Warrant Co.,

Wall, N. Y.

**ile Drivers.**

Vulcan Iron Wks., Chicago, Ill.

**ipe, Bent.**

National Pipe Bending Co., New Haven.

**ipe Cutting and Threading Ma-**

chines.

Bignal & Keeler Mfg. Co., St. Louis, Mo.

Merrill Mfg. Co., Toledo, O.

Pancoast & Maule, Philadelphia,

Saunders' Sons, D., Yonkers, N. Y.

**ipe Grills.**

Frentiss Vise Co., 44 Barclay, N. Y.

**Pipes, Fitting, &c., Makers of.**

McNab & Hardin Mfg. Co., N. Y.

**ipe, Water and Gas.**

Makers of Cumberland Nail & Iron Co., Phila., Pa.

Donaldson Iron Co., Emmaus, Pa.

Riverside Iron Works, Wheeling, W. Va.

Wood, R. D. & Co., Philadelphia, Pa.

**iane Irons.**

Manufacturers of Buck Bros., Millbury, Mass.

**lanes, Manufacturers of.**

Stanley Rule & Level Co., N. Y.

**late Iron and Steel.**

Marsa-Standart Iron & Steel Co.,

Bridgeport, J.

McKenna Iron & Steel Co., Coatesville, Pa.

Mahoning Valley Iron Co., Youngs-

town, O.

McKean-McLean Co., Pittsburgh, Pa.

McIlvain & Sons, Reading, Pa.

Pottstown Iron Co., Pottstown, Pa.

Pottsville Iron & Steel Co., Pottsville, Pa.

**lbers.**

Singer, Nimick & Co., Pittsburgh, Pa.

The Mahoning Valley Iron Co., Youngs-

town, O.

Wellman Iron & Steel Co., Thurlow, Pa.

Woodman & Son, Philadelphia.

**lating, Nickel, Brass and**

Silver.

Wilmet & Hobbs Mfg. Co., Bridgeport,

Conn.

**Riveting Machines.**

Adt, Jno. & Sons, New Haven, Conn.

**Rousers & Bakers.**

Matthai, Ingram & Co., Baltimore, Md.

**Rock Drills.**

Penna. Diamond Drill & Mfg. Co.

Birdsboro, Pa.

Hand Drill Co., 23 Park Place, N. Y.

**lumbers.**

Chicago Fdy. Supply Co., Chicago, Ill.

**Pokers and Lifters.**

Troy Nickel Works, Troy, N. Y.

**Polishing Machines.**

Watson & Stillman, 204 E. 43d, N. Y.

**Polishing Wheel.**

La Massena, C. E. & Co., Newark, N. J.

**Post Hole Diggers.**

Kohler, F. E. & Co., Canton, O.

**Power Hack Saws.**

Millers Falls Co., 93 Read St., N. Y.

**Power Hacks.**

Miller, F. W., & Co., Freeport, Ill.

**Power Hammers.**

Bradley & Co., Syracuse, N. Y.

**Power Hacksaws.**

Miller, F. W., & Co., Freeport, Ill.

**Power Hammers.**

Bradley & Co., New Haven, Conn.

**Power Hacksaws.**

Miller, F. W., & Co., Freeport, Ill.

**Power Hammers.**

Bradley & Co., New Haven, Conn.

**Power Hacksaws.**

Miller, F. W., & Co., Freeport, Ill.

**Power Hammers.**

Bradley & Co., New Haven, Conn.

**Power Hacksaws.**

Miller, F. W., & Co., Freeport, Ill.

- Allentown Rolling Mill, Allentown, Pa.  
Illinois Steel Co., Chicago, Ill.  
Lockhart Iron & Steel Co., Pittsburgh, Pa.  
Passaic Rolling Mill Co., Paterson, N.J.  
Pottsville Iron & Steel Co., Pottsville, Pa.  
Roberts, A. & P. & Co., Phila., Pa.  
The Phoenix Iron Co., Phila., Pa.  
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**  
Ame Shear Co., Bridgeport, Conn.  
Heinische, R. Sons Co., Newark, N.J.  
**Sheet Iron and Steel, Manufacturers of.**  
Atha Standard Iron and Steel Co.,  
Bridgeport, Conn.  
Cambridge Iron & Steel Co., Cambridge,  
Ohio.  
Chese Bros., Pittsburgh, Pa.  
Mahoning Va ley Iron Co., Livingston,  
Ohio.  
Moorehead-McCleane Co., Pittsburgh  
Pierson & Co., 29 Broadway, N.Y.  
Relly, John W., Fort Hunter P.O., Pa.  
Singer, Nimick & Co., Ltd., Pittsburgh,  
Pa.  
The Mahoning Valley Iron Co., Youngs-  
town, O.  
Alan Wood Co., Philadelphia.  
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Metal Work.**  
Clark & Cowles, Plainville, Conn.
- Sheet Zinc.**  
Matthiessen & Hegeler Zinc Co., La-  
Salle, Ill.
- Sheaf Brackets.**  
Koch, A. B. & Co., Peoria, Ill.
- Shovels, Spades and Scoops.**  
Meyers, H. M. Co., Beaver Falls, Pa.
- Sinks.**  
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**  
Dame, Stoddard & Kendall, Boston,  
Mass.  
Winslow, Sam'l., Skate Mfg. Co.,  
Worcester, Mass.
- Skates, Roller.**  
Henley, M. C., Richmond, Ind.  
Winslow, Sam'l., Skate Mfg. Co., Wor-  
cester, Mass.
- Smelting Works.**  
Reeves, Paul S., 760 S. Broad, Phila.
- Speaking Tubes.**  
Ostrander, W. R. & Co., 204 Fulton St.,  
N.Y.  
Wollensak, J. F., Chicago, Ill.
- Specialties, Pat. Articles.**  
Konigslow, O., Cleveland, O.
- Speed Indicators.**  
Church & Sleight, 103 Fulton St., N.Y.
- Speier.**  
Matthiessen & Hegeler Zinc Co., La-  
Salle, Ill.
- Spoons and Forks.**  
Holmes & Edwards Silver Co., Bridge-  
port, Conn.  
Rogers, The Wm. Mfg. Co., Hartford,  
Conn.
- Sporting Goods.**  
Hartley & Graham, 313-315 B'way, N.Y.
- Springs.**  
American Spiral Spring Co., Pitts-  
burgh, Pa.  
Dunbar Bros., Bristol, Conn.  
Miller & Van Winkle, Brooklyn, N.Y.  
Morgan Spring Co., Worcester, Mass.  
Nourse, Fred. Co., 315 to 319 E. 22d St.,  
N.Y.  
Sabin Machine Co., Montpelier, Vt.  
Tuck Mfg. Co., Brockton, Mass.  
Washburn & Moon Mfg. Co., Worces-  
ter, Mass.  
Wolf, R. H. & Co., Ltd., 118th St. an-  
Harlem River, N.Y.
- Spring Hinges.**  
Bardsley, J., 149 & 151 Baxter St., N.Y.  
Pullman Sash Balance Co., Rochester,  
N.Y.  
Stover Mfg. Co., Freeport, Ill.  
Van Wagoner & Williams Co., 14 War-  
ren St., N.Y.
- Spring Keys and Cotters.**  
Whitman & Barnes Mfg. Co., Syracuse,  
N.Y.
- Sprinklers.**  
Shepard, Sidney & Co., Buffalo, N.Y.  
Smith, Oliver A., Clarkston, Mich.
- Stamped Ware.**  
Am. Stamping Co., 104 & 106 John St.,  
New York.
- Stamping Works.**  
Avery Stamping Co., Cleveland, O.  
Cleveland Stamping & Tool Co., Cleve-  
land, O.
- Staples.**  
Cobb & Drew, Plymouth, Mass.  
Tlthener E. H. & Co., Binghamton, N.Y.
- Steam Gauges.**  
Ashcroft Mfg. Co., 111 Liberty St., N.Y.  
Bristol Mfg. Co., Waterbury, Conn.
- Steam Hammers, etc., Makers of.**  
Diencl & Eisenhardt, Philadelphia.  
Dudgeon, Richard, 24 Columbia Street,  
N.Y.  
Trehewey Mfg. Co., Pittsburgh, Pa.
- Steam Heating.**  
Webster Warren & Co., Phila., Pa.
- Steam Separators.**  
Goubert Mfg. Co., 32 Cortland St. N.Y.
- Steel Balls.**  
Grant Anti-Friction Ball Co., Fitch-  
burg, Mass.
- Steel, Cold Rolled Strip.**  
Wilmet & Hobbs Mfg. Co., Bridgepor-  
t, Conn.
- Steel Figures and Alphabets.**  
Krogsrud, W., 81 Fulton, N.Y.
- Steel Importers.**  
Abbott, Jere & Co., N.Y. and Boston.  
Hobson, Francis, Seaman & Co., 9  
John St., N.Y.  
Jessop, Wm. & Sons, Sheffield, Eng-  
land, or 91 John, N.Y.  
Mills, A. & Co., 1 Broadway, N.Y.  
Newton & Shipman, 83 John, N.Y.  
Wetherell Bros., 81 Liberty St., N.Y.  
Whitney, A. R. & Co., Edway, N.Y.  
Wolff, R. H. & Co., 118th Street  
and Harlem River, N.Y.
- Steel (Musket's) Special.**  
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**  
Atha Standard Iron & Steel Co.,  
Bridgeport.  
Bethlehem Iron Co., S. Bethlehem, Pa.  
Berger, Herman & Co., 103 Duane St.,  
Chester Steel Castings Co., Phila., Pa.  
Chrome Steel Works, Brooklyn, N.Y.  
Crescent Steel Co., Pittsburgh, Pa.  
Elken & Co., Hagen, Germany.  
Frankford Steel Co., Philadelphia.  
Gauthier Steel Department of Cambria  
Iron Co., Johnstown, Pa.  
Hobson, Francis, Seaman & Co., 9  
John St., N.Y.  
Illinois Steel Co., Chicago, Ill.  
Jessop, Wm. & Sons, Sheffield, Eng-  
land, or 91 John, N.Y.  
Kaiser, Ellison & Co., Sheffield, Eng.  
La Belle Steel Co., Pittsburgh, Pa.  
Lukens Iron & Steel Co., Coatesville, Pa.  
Moorehead-McCleane Co., Pittsburgh, Pa.  
Moss, F. W., 83 John, N.Y.  
Naylor & Co., 45 Wall, N.Y.  
Pennsylvania Steel Co., Steelton, Pa.  
Pottsville Iron and Steel Co., Pott-  
ville, Pa.  
Relly, J. W., Fort Hunter P.O., Pa.  
Rowland, Wm. & Harvey, Frankfort,  
Philadelphia.  
Singer, Nimick & Co., Pittsburgh.  
Stanley Iron Improvement Co., Pitt-  
burgh, Pa.  
Taylor Iron & Steel Co., High Bridge, N.J.  
Wolday, S. C., Sheffield, Eng.  
Wetherell Bros., 83 Liberty, N.Y.  
Wilmet & Hobbs Mfg. Co., Bridgepor-  
t, Conn.
- Steel, Manufacturers' Agents.**  
Barnes, C. K. & Co., Philadelphia, Pa.  
Corning, Edw. & Co., 29 B'way, N.Y.  
Lindsay, Jas. G. & Co., Phila., Pa.  
Pierson & Co., 29 Broadway, N.Y.
- Steel Rails, Manufacturers of.**  
Bethlehem Iron Co., S. Bethlehem, Pa.  
Cambria Iron Co., Johnstown, Pa.  
Illinoi Steel Co., Chicago, Ill.  
Pennia Steel Co., Steelton, Pa.  
Montour Iron & Steel Co., Danville, Pa.  
Riverside Iron Wks., Wheeling, W. Va.
- Steel Spiral Springs, Manufacturers.**  
Cartillion, John & Sons, N.Y.  
Holand, Wm. & Harvey, Frankfort.  
Wolff, R. H. & Co., Ltd., 118 Street an-  
Harlem River, N.Y.
- Steel Tools.**  
Frankford Steel Co., Philadelphia, Pa.  
Jessop, Wm. & Sons, Sheffield, Eng-  
land, 91 John, N.Y.  
Jones, B. M. & Co., Boston, Mass.  
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders.**  
Bicycle Step Ladder Co., Chicago, Ill.  
Croissant, M., Albany, N.Y.
- Stocks and Dies.**  
Astro Mfg. Co., Bridgeport, Conn.  
Billing & Son, Co., Hartford, Conn.  
Butterfield & Co., Derby Line, Vt.  
Hart Mfg. Co., Cleveland, O.  
Schneider's Sons, D., Yonkers, N.Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield,  
Mass.
- Storage.**  
Security Warehouse, E. St. Louis, Ill.
- Stove Linings.**  
Ostrander Fire Brick Co., Troy, N.Y.
- Stove Pipe Thimbles.**  
Cheney, S. & Son, Manlius, N.Y.
- Stove Trimnings.**  
Troy Nickel Works, Troy, N.Y.
- Street Lamps.**  
Steam Gauge & Lantern Co., Syracuse,  
N.Y.
- Strops.**  
Electric Cutlery Co., 113 Chambers, N.Y.  
J. R. Torrey & Co., Worcester, Mass.
- Strapping Machines.**  
Schmitz, E. Lothar, 92 Reade St., N.Y.
- Structural Iron Work.**  
Berlin Iron Bridge Co., East Berlin,  
Conn.  
Boston Bridge Wks., Boston, Mass.  
Lindsay, Jas. G. & Co., Phila., Pa.  
Wrought Iron Bridge Co., Canton, O.
- Sulphuric Acid.**  
Matthiessen & Hegeler Zinc Co., La-  
Salle, Ill.
- Tacks, Brads, Staples, etc.**  
Atlas Tack Corporation, Boston, Mass.  
Cobb & Drew, Plymouth, Mass.  
Grand Crossing Tack Co., Grand Cross-  
ing, Ill.  
Nat. Screw & Tack Co., Cleveland, O.  
Phillips, E. & Sons, South Hanover.  
Plymouth Mills, Plymouth, Mass.  
Trafant, W. E., Whitman, Mass.
- Paper and Dies.**  
Batterfield & Co., Derby Line, Vt.  
Carpenter, J. M., Tap & Die Co., Paw-  
tucket, R.I.  
Manning, Maxwell & Moore, 111 Lib-  
erty, St., N.Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield,  
Mass.
- Testing Laboratories.**  
Richie Bros. Testing Mch. Co., Phila-  
delphia.
- Testing Machines.**  
Richie Bros. Testing Mch. Co., Phila-  
delphia.
- Theatrical Hardware.**  
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**  
Frost Thill Spring Co., Boston, Mass.  
Hull Machine Co., Montpelier, Vt.
- Time Record.**  
Scattergood, H. W., Phila., Pa.
- Tinner's Hardware.**  
Berger Bros., Philadelphia, Pa.
- Tinning Process.**  
Sands, Thomas, Nashua, N.H.
- Tin Plate Machinery.**  
Lloyd Boat Co., Youngstown, Ohio.
- Tinware.**  
Am. Stamping Co., 104 & 106 John St.,  
Mathai, Ingram & Co., Baltimore, Md.
- Tire Upsetters.**  
Butts & Ordway, Boston, Mass.  
Illinois Iron & Bolt Co., Carpenters-  
ville, Ill.
- Toe Calks, Steel.**  
Burke, P. F., Boston, Mass.
- Tool Chests.**  
Am. Tool Co., 200 W. Houston St., N.Y.
- Toots.**  
Atkins, E. C. & Co., Indianapolis, Ind.  
Britton, Horace E., Stoughton, Mass.  
Brown, R. H. & Co., New Haven, Conn.  
Chanerial Tool Co., Reading, Pa.  
Mayhew, H. H. Co., Shelburne Falls,  
Mass.
- Millers Falls Co., 93 Reade, N.Y.**  
Richardson, C. F. & Son, Athol, Mass.  
Stanley Tool Co., Athol, Mass.  
Stanley Rule & Level Co., 29 Chambers,  
Starrett, L. S., Athol, Mass.
- Tools, Blacksmith and Wheel-  
wrights.**  
Buffalo Forge Co., Buffalo, N.Y.  
Butts & Ordway, Boston, Mass.  
Champion Blower & Forge Co., Lan-  
caster, Pa.
- Illinois Iron & Bolt Co., Carpenter-  
ville, Ill.**
- Plumb, Fayette R., Philadelphia, Pa.**  
Wiley & Russell Mfg. Co., Greenfield,  
Mass.
- Tools, Steam and Gas Filters.**  
Saunders Sons, D., Yonkers, N.Y.
- Torches, Oil and Gasoline.**  
Dangler Stove & Mfg. Co., Cleveland, O.  
Schneider & Trenkamp Co., Cleveland,  
Ohio.
- Transom Lifters.**  
Wollensak, J. F., Chicago, Ill.
- Trucks, Manufacturers of.**  
Berger Bros., Philadelphia, Pa.  
Boston & Lockport Block Co., Boston,  
Mass., and Lockport, N.Y.  
Clark, G. P., Windsor Locks, Conn.  
Lansing Wheelbarrow Co., Lansing,  
Mich.
- Tubes, Seamless Drawn Copper.**  
Aanson Brass & Copper Co., 19 and 21  
Cliff, N.Y.  
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**  
Leng's John S. Son & Co., 4 Fletcher  
St., Ne York.
- Tumbling Barrels.**  
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**  
Cleveland City Forge & Iron Co.,  
Cleveland, O.  
Merrill Bros., Brooklyn, E.D.
- Twine Cutters.**  
Wild, A. L., Providence, R.I.
- Twist Drills, Makers of.**  
Cleveland Twist Drill Co., Cleveland.  
Morse Twist Drill & Machine Co., New  
Bedford, Mass.  
New Process Twist Drill Co., Taunton,  
Mass.
- Standard Tool Co., Cleveland.**
- Tubes, Gas, Water and Steam.**  
Best, Fox & Co., Pittsburgh, Pa.  
Chapman Valve Mfg. Co., Boston.  
Jenkins Bros., 71 John, N.Y.  
McNab & Hart Mfg. Co., 56 John N.Y.  
Mason Regulator Co., Boston, Mass.
- Ventilator Appliances.**  
Howard & Morse, 45 Fulton, N.Y.
- Vise Jaws.**  
Newark Mch. Tool Co., Newark, N.J.
- Vises.**  
Hollands Mfg. Co., Erie, Pa.  
Howard Iron Works, Buffalo, N.Y.  
Millers Falls Co., 93 Reade St., N.Y.  
Prentiss Vise Co., 44 Barclay N.Y.  
Vance & Williams Co., 14 Warren St., N.Y.
- Wagon Jacks.**  
Boston & Lockport Block Co., Boston,  
Mass., and Lockport, N.Y.  
Cover Mfg. Co., West Troy, N.Y.  
Cover's Saddlery Works, Farmer, N.Y.
- Washers.**  
Haskell, Wm. H. Co., Pawtucket, R.I.  
Milton Mfg. Co., Milton, Pa.  
Sternbergh, J. H. & Son, Reading, Pa.
- Water Meters.**  
Worthington, Henry R., 86 & 88 Lib-  
erty St., N.Y.
- Water Wheels.**  
Fole, Robt. & Son Co., Baltimore, Md.
- Well Boring Machines.**  
Oil Well Supply Co., Pittsburgh, Pa.
- Well Machinery.**  
Amer. Well Works, Aurora, Ill.
- Wheelbarrows.**  
Akron Tool Co., Akron, O.  
Amer. Steel Scraper Co., Sidney, Ohio.  
Cockburn Barrow & Mch. Co., Jersey  
City, N.J.
- Kilbourne & Jacobs Mfg. Co., Colum-  
bus, Ohio.**
- Lansing Wheelbarrow Co., Lansing,  
Mich.**
- Sidney Steel Scraper Co., Sidney, O.**
- Sweatt Mfg. Co., Minneapolis, Minn.**
- Whips.**  
American Whip Co., Westfield, Mass.
- Window Cord, Makers of.**  
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**  
Amer. Spiral Spring Co., Pittsburg, Pa.  
Amer. Wire Nail Co., Anderson, Ind.  
Consolidated Steel & Wire Co., St.  
Louis, Mo.
- Gauthier Steel Department of Cambria  
Iron Co., Johnstown, Pa.**
- Miller & Van Winkle, Brooklyn, N.Y.**
- New Castle Wire Nail Co., New Castle,  
Pa.**
- New Haven Wire Mfg. Co., New  
Haven, Conn.**
- Prentiss, Geo. W., & Co., Holyoke, Mass.**
- Salem Wire Nail Co., Salem, I.**
- Trenton Iron Co., Trenton, N.J.**
- Washburn & Moon Mfg. Co., Worcester,  
Mass.**
- Wetherell Bros., 93 Liberty St., N.Y.**
- Wolff, R. H. & Co., Ltd., 118th St. and  
Harlem River, N.Y.**
- Wright & Colton Wire Cloth Co.,  
Worcester, Mass.**
- Wire Cloth.**  
Barnum, E. T., Detroit, Mich.  
Clinton Wire Cloth Co., Clinton, Mass.  
Darby, Edward & Sons, Philadelphia.  
Eddy, W. S., 65 Fulton, N.Y.  
Gilbert & Bennett Mfg. Co., 42 Cliff.  
Howard & Morse, 45 Fulton, N.Y.  
J. W. Wire Cloth Co., Trenton, N.J.  
Reliance Wire & Iron Wks., Milwaukee,  
Wis.
- Wire Cutters.**  
King, J. M. & Co., Watertown, N.Y.
- Wire Dies.**  
McFarland, Wm., Trenton, N.J.  
Newton & Shipman, 83 John, N.Y.
- Wire Door Mats.**  
Hartman Mfg. Co., Beaver Falls, Pa.  
The Wire Goods Co., Worcester, Mass.  
White Mfg. Co., Minneapolis, Minn.
- Wire Fences.—See Fencing, Iron and  
Wire.**
- Wire Goods, Manufacturers of.**  
Darby, Edward & Sons, Phila.  
Gilper & Bennett Mfg. Co., 42 Cliff St.,  
N.Y.
- Ludlow-Saylor Wire Co., St. Louis.**  
Ossawan Mills Co., Norwich, Conn.  
Scheeler & Sons, Buffalo, N.Y.
- Whitman & Barnes Mfg. Co., Syracuse,  
N.Y.**
- Wire Goods Co., Worcester, Mass.**
- Wickwire Bros., Cortland, N.Y.**
- Wright & Colton Wire Cloth Co., Wor-  
cester, Mass.**
- W. S. Tyler Wire Works Co., Cleved'.**
- Wire Cutters.**  
King, J. M. & Co., Watertown, N.Y.
- Wire Dies.**  
McFarland, Wm., Trenton, N.J.  
Newton & Shipman, 83 John, N.Y.
- Wire Door Mats.**  
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Ossawan Mills Co., Norwich, Conn.  
Scheeler & Sons, Buffalo, N.Y.
- Whitman & Barnes Mfg. Co., Syracuse,  
N.Y.**
- Wire Goods Co., Worcester, Mass.**
- Wickwire Bros., Cortland, N.Y.**
- Wright & Colton Wire Cloth Co., Wor-  
cester, Mass.**
- Wire Machinery.**  
Am. Tool Wks., Cleveland, O.  
Manville, E. J. Moh. Co., Waterbury, Ct.  
Morgan Construction Co., Worcester  
Mass.
- Waterbury Mch. Co., Waterbury, Conn.**
- Wire Straightening and Cutting  
Machinery.**  
Adt, John & Son, New Haven, Conn.
- Wire Nails.**  
Amer. Wire Nail Co., Anderson, Ind.  
Baackes Wire Nail Co., Cleveland, O.  
Consolidated Steel & Wire Co., St.  
Louis, Mo.
- Indiana Wire Fence Co., Crawfords  
ville, Ind.**
- Kilmer Mfg. Co., Newburg, N.Y.**
- New Castle Wire Nail Co., New Castle,  
Pa.**
- Phillips, E. & Sons, South Hanover Mass.**  
Phillips, Toynend & Co., Phila., Pa.  
Plymouth Mills, Plymouth, Mass.  
Salem Wire Nail Co., Salem, O.  
Whitney, A. R. & Co., New York City
- Wire Rods, Steel.**  
Amer. Wire Nail Co., Anderson, Ind.  
Consolidated Steel & Wire Co., St.  
Louis, Mo.
- Illinois Steel Co., Chicago, Ill.**
- New Castle Wire Nail Co., New Castle,  
Pa.**
- Washburn & Moon Mfg. Co., Worcester,  
Mass.**
- Whitney, A. R. & Co., 17 B'way, N.Y.**
- Wolf, R. H. & Co., Ltd., 118th Street  
and Harlem River, N.Y.**
- Wire Rope, Iron and Steel  
Makers.**  
Broderick & Bascom Rope Co., St.  
Louis, Mo.
- California Wire Works, San Francisco**
- Hazard Mfg. Co., Wilkesbarre, Pa.**
- A. Leschen & Sons, Rope Co., St. Louis.**
- Watson Iron Co., Trenton, N.J.**
- Washburn & Moon Mfg. Co., Worcester,  
Mass.**
- Williamsport Wire Rope Co., Williams-  
port, Pa.**
- Woodenware.**  
Tucker & Dorsey Mfg. Co., Indianap-  
olis, Ind.
- Wood-Working Machinery.**  
Fay, J. A., & Eran Co., Cincinnati, O.  
Seneca Falls Mfg. Co., Seneca Falls, N.Y.
- Wrenches, Manufacturers of.**  
Bemis & Call Hardware & Tool Co.  
Springfield, Mass.
- Billing, Spencer & Co., Chicago, Ill.**
- Central Iron & Steel Co., Brazil, Ind.**
- Coe Wrench Co., Worcester, Mass.**
- Keystone Mfg. Co., Buffalo, N.Y.**
- Portsmouth Wrench Co., Boston, Mass.**
- Trimont Mfg. Co., Roxbury, Mass.**
- Williams, J. H., Brooklyn, N.Y.**
- Wringers.**  
Colby Wringer Co., Montpelier, Vt.

# ALPHABETICAL INDEX TO ADVERTISERS.

Abbott, Jere & Co.	19	Brown, R. H. & Co.	68	Cross & Speirs Machine Co.	48	Hall & Ross Husking Glove Co.	64
Acme Shear Co.	77	Brown & Sharpe Mfg. Co.	58	Crown Smelting Co.	3	Halsey, Jas. T.	49
Adt, John & Son	48	Bryden Horse Shoe Co.	94	Crukshank, D. B.	59	Hamilton Machine Tool Co.	48
Etna-Standard Iron & Steel Co.	21	Buck Bros.	77	Cumberland Nail & Iron Co.	18	Hammer & Co.	96
Aiken, Henry	27	Buckeye Engine Co.	35	Curley, J. & Bro.	77	Hardware Board of Trade.	62
Akron Tool Co.	98	Buffalo Forge Co.	65&110	Cushman Chuck Co.	50	Harrington, E., Son & Co.	55
Alexander Bros.	39	Buffalo Scale Co.	96	Dallett, Thos. H. & Co.	52	Harrington & King Perforating Co.	11
Allentown Rolling Mills	29	Buffalo Edge Tool Works.	76	Dame, Stoddard & Kendall	84	Hart, Henry C. Mfg. Co.	85
Almond, T. R.	43	Buffalo Specialty Mfg. Co.	70	Dangler Stove & Mfg. Co.	88	Hart Mfg. Co.	50
Am. Bit Brace & Tool Co.	79	Bullock Bellows Co.	45	Darby, Edw. & Sons.	8	Hartford Steam Boiler Insp. and Ins.	
Am. Bolt Co.	101	Burden Iron Co.	94	Davies, Chas. & Co.	76	Co.	34
Am. Metal Co.	4	Burditt & Williams	92	Davis & Cook.	69	Hartley & Graham.	1
Am. Pig Iron & Storage Warrant Co.	15	Burgess & Luxley	110	Davis, I. B. & Son.	32	Hartman Mfg. Co.	9
Am. Screw Co.	14	Burke, P. F.	95	Davol, John & Sons.	2	Haskell, Wm. H. Co.	102
Am. Spiral Spring Co.	4	Burnham, Geo. & Co.	46	Dean Bros. Steam Pump Works	38	Haydock & Bissell.	62
Am. Stamping Co.	87	Burr & Houston Co.	27	Deitz, A. E.	93	Hazard Mfg. Co.	6
Am. Steel Scraper Co.	98	Bussenius & Cunliffe	61	DeKalb Fence Co.	9	Helnisch's R. Sons Co.	77
Am. Tool Co.	86	Butcher, W. & S.	78	Deming Co.	70	Henderson Bros.	32
Am. Tool Works	59	Butterfield & Co.	51	Detrick & Harvey Machine Co.	55	Hendey Machine Co.	66
Am. Vending Machine Co.	65	Butts & Ordway	46	Detroit Cork Screw Co.	80	Hendricks Bros.	2
Am. Well Works	36	C. & C. Electric Motor Co.	33	Detroit Dynamo Co.	33	Henley, M. C.	83&100
Am. Whip Co.	109	Caldwell Mfg. Co.	90	Detroit Foundry Equipment Co.	32	Henn, A. S. & Co.	92
Am. Wire Nail Co.	13	California Wire Works	5	Detroit Graphite Mfg. Co.	29	Herbrand Co.	24
Ames Sword Co.	90	Cambrria Iron Co.	20	Diamond State Iron Co.	94	Herrick, J. A.	31
Ansonia Brass & Copper Co.	2	Cambridge Iron & Steel Co.	25	Dienelt & Eisenhardt	46	Hertz, T. & Son.	4
Arcade Malleable Iron Co.	25	Cambridge Roofing Co.	15	Disston, Henry & Sons	73	Hiles, C. A. & Co.	72
Armstrong Mfg. Co.	45	Canfield, H. O.	40	Dixon, Jos., Crucible Co.	40	Hillebrand & Wolf.	49
Arnold, F. H.	6	Capitol Mfg. Co.	97	Donaldson Iron Co.	27	Hill, Clarke & Co.	60
Artificial Gas Engineering Co.	30	Carbon Steel Co.	21	Doscher, Martin	77	Hirsch, L. K.	61
Aschman Steel Casting Co.	27	Carlin's Sons, Thomas	61	Douglas, W. & B.	70	Hobson, F., Seaman & Co.	19
Ashcroft Mfg. Co.	36	Carpenter, J. M. Tap & Die Co.	109	Draper Machine Tool Co.	54	Hoffman, J. W. & Co.	18
Atkins, E. C. & Co.	72	Carten, Henry J.	31	Dudgeon, Richard	47	Hogan, John L. & Co.	18
Atlas Tack Corporation	12	Chadborne & Coldwell Mfg. Co.	100	Duffy, J. A.	63	Hoggson & Pettis Mfg. Co.	50
Avery Stamping Co.	1	Chambers Bros. Co.	102	Dunbar Bros.	5	Hollands Mfg. Co.	71
Baackes Wire Nail Co.	13	Champion Blower & Forge Co.	49	Dunham Nut Machine Co.	55	Holmes, Booth & Haydens.	2
Babcock & Wilcox Co.	37	Champion Iron Co.	9	Dupont Mfg. Co.	42	Holmes & Edwards Silver Co.	80
Raeder, Adamson & Co.	88	Chantrell Tool Co.	68	Durant, W. N.	63	Holt, Hiram & Co.	99
Banker & White	74	Chapman Mfg. Co.	110	Dwight Slate Machine Co.	45	Horton & Son Co., E.	50
Bardsley, J.	91	Chapman Valve Mfg. Co.	35	Eaton, Geo. H. & Co.	44	Hotchkiss, E. S.	86
Barnes, C. K. & Co.	22	Chatillon, John & Sons	88	Eccles, Richard	92	Houston, C. B. & Co.	18
Barnes, W. F. & John	43	Cheney, S. & Son	24	Edge Moor Iron Co.	28	Howard Iron Works.	96
Barnett, G. & H.	75	Chess Bros.	25	Ehrhardt, Gustave & Sons	12	Howard & Morse.	7
Barnum, E. T.	9	Chester Steel Casting Co.	26	Eiken & Co.	24	Howson & Howson.	6
Bass Foundry & Machine Works	35	Chicago Foundry Supply Co.	29	Electric Cutlery Co.	78	Hudson, C. E. & Co.	82
Becker, Jno. Mfg. Co.	42	Christy Knife Co.	79	Emory, P. P. Mfg. Co.	9	Hulbert Bros. & Co.	109
Belden Machine Co.	43	Chrome Steel Works	24	Empire Portable Forge Co.	89	Hunt, Robert W. & Co.	51
Bell, Geo. E.	51	Church, Isaac	102	Enterprise Mfg. Co. of Pa.	87	Hurley Bros.	43
Bement, Miles & Co.	46	Church & Sleight	39	Frie Engine Works	37	Huron Grindstone Co.	56
Bemis & Call Hardware & Tool Co.	96	Cincinnati Milling Mch. Co.	65	Estey, W. S.	9	Hussey, E. J. & Co.	62
Berger Bros.	96	Clafien Mfg. Co.	40	Ette & Henger Mfg. Co.	101	Ideal Mfg. Co.	85
Berlin Iron Bridge Co.	10	Eureka Cast Steel Co.	110	Etting, Edw. J.	18&28	Illinois Iron & Bolt Co.	47
Best, Fox & Co.	39	F. & N. Mfg. Co.	100	Fay, P. P. Mfg. Co.	9	Illinois Pure Aluminum Co.	87
Bethlehem Iron Co.	22	Clark & Cowles	6	Fitch, W. & E. T.	109	Illinois Steel Co.	21
Bevin Bros. Mfg. Co.	84	Cleveland Block Co.	93	Fitzgerald, S. C.	6	Indiana Wire Fence Co.	3
Bickford Drill & Tool Co.	53	Cleveland City Forge & Iron Co.	1	Fitzsimons & Co.	18	Ingersoll Milling Machine Co.	44
Bicycle Step Ladder Co.	89	Cleveland Novelty Co.	100	Fearing, Wm. S.	2	Ives, H. B. & Co.	96
Bigelow, C. R.	60	Cleveland Rubber Works	79	Ferdinand, L. W. & Co.	85	Jacobus, W. H.	102
Bignal & Keeler Mfg. Co.	47	Cleveland Stamping & Tool Co.	87	Field, Alfred & Co.	76	Jarecki Mfg. Co.	45
Billings & Spencer Co.	96	Cleveland Stone Co.	51	Fitchburg Machine Works	46	Jefferson County Mining & Quarrying Co.	32
Billington, J. H. & Co.	34	Cleveland Twist Drill Co.	52	Fitzgerald, S. C.	6	Jeffrey Mfg. Co.	39
Bingham, W. Co.	85	Clinton Wire Cloth Co.	8	Fitzsimons & Co.	18	Jenkins Bros.	1
Birmingham Iron Foundry	25	Cobb & Drew	6	Flagg, Stanley G. & Co.	110	Jenkins & Lingle.	43
Blake & Johnson	13	Cockburn Barrow & Machine Co.	100	Forehand Arms Co.	84	Jenner, H. W. T.	6
Bliss Co., E. W.	41	Coes, Loring & Co.	97	Fraim, E. T.	90	Jessop, Wm. & Sons.	19
Boardman, L. & Son	69	Coe's Wrench Co.	97	Frankford Steel Co.	28	Johns, H. W. Mfg. Co.	16
Bogert, John L.	65	Conroy, P. J. & Co.	91	Freeport Bicycle Mfg. Co.	85	Johnson Foundry Co.	27
Boker, Hermann & Co.	19	Consolidated Steel & Wire Co.	15	Frost Thill Spring Co.	92	Johnson, I. G. & Co.	110
Boone, W. C. Mfg. Co.	24	Continental Iron Works	35	Fulton Iron & Engine Works	54	Johnson, I. H., Jr., & Co.	54
Booth, The Lloyd Co.	28	Copeland & Bacon	54	Gardner, Jas. & Son	28	Jones, B. M. & Co.	22
Borden & Lovell	6	Corning, Edw. & Co.	17	Garrison, A., Foundry Co.	25	Jones, Jesse & Co.	69
Borgne, Cyrus	28	Correspondence School of Mechanics	47	Garvin Machine Co.	60	Jones & Lanson Machine Co.	66
Boston Bridge Works	16	Cotton, Barclay W. & Co.	17	Gautier Steel Department	16&22	Kayser, Ellison & Co.	19
Boston Gear Works	36	Coulter & McKenzie Machine Co.	46	Gaylor, F. L. Co.	3	Keeley, Jerome & Co.	18
Boston & Lockport Block Co.	93	Coventry Machine Co.	67	Gilbert & Bennett Mfg. Co.	8	Kelley Woolworth.	78
Box, Alfred & Co.	54	Covert Mfg. Co.	92	Glazier Stove Co.	67	Kelly, Daniel.	60
Bradford Mill Co.	53	Covert's Saddlery Works	67	Gleason Tool Co.	50	Kennedy, Julian.	31
Bradlee & Co.	17	Cox, Justice, Jr.	22	Goodell Co.	78	Keyless Lock Co.	90
Bradley & Co.	41&109	Cramp, Wm. & Sons S. & E. B. Co.	3	Goodell, J. W.	70	Keys, W. W. & R. M. Co.	109
Bradley Fertilizer Co.	43	Crescent Horse Shoe & Iron Co.	94	Gouber Mfg. Co.	33	Keystone Clutch & Machine Works.	51
Brass Goods Mfg. Co.	2	Crescent Phosphorized Metal Co.	3	Gould & Eberhardt.	40	Keystone Mfg. Co.	91
Bridgeport Chain Co.	82	Crofton, Geo. V. Co.	44	Goulds Mfg. Co.	30	Kilbourne & Jacobs Mfg. Co.	98
Bridgeport De-oxidized Bronze & Metal Co.	3	Croissant, M.	89	Graham, John H. & Co.	86	Klimer Mfg. Co.	7
Bridgeport Gun Implement Co.	52	Crosby, G. A. & Co.	43	Grand Crossing Tack Co.	12	King, J. M. & Co.	75
Briggs, Marvin.	60	Crosby Steam Gauge & Valve Co.	3	Grant Anti-Friction Ball Co.	45	Knapp & Cowles Mfg. Co.	88
Bristols' Mfg. Co.	1	Halk & Naumann.		Grant Corundum Wheel Mfg. Co.	56	Koch, A. B. & Co.	70
Britton, Horace E.	72			Green, A. H.	96	Kohler, F. E. & Co.	100
Britton, J. Blodgett.	30			Gurney, F. B.	77	Konigsow, Otto.	70
Broderick & Bascom Rope Co.	6			Haight & Clark.	27	Kreischer, B. & Sons.	28
Bronson Supply Co.	88			Haines & Zimmerman.	80	Krogsvrud, W.	74
Brown, E. E. & Co.	93			Haines Gauge Co.	30	La Belle Steel Co.	23
Brown Hoisting & Conveying Mch. Co.	39			Haflin & Rand Powder Co.	3	Laflin & Rand Powder Co.	25

Lamberson, B.....	62	New Haven Copper Co.....	2	Richardson, C. F. & Son.....	71	Tablet & Ticket Co.....	65
Lane Brothers.....	90	New Haven Mfg. Co.....	46	Ridgway, Craig & Son.....	58	Talcott, W. O.....	40
Lang Mfg. Co.....	97	New Haven Wire Mfg. Co.....	6	Riehl Bros. Testing Machine Co.....	42	Taylor Iron & Steel Co.....	24
Lansing Wheelbarrow Co.....	99	N. J. Wire Cloth Co.....	8	Ripley Mfg. Co.....	87	The Audubon.....	65
Lape, W. E.....	101	New Process Twist Drill Co.....	52	Riverside Iron Works.....	20	Thomson Electric Welding Co.....	24
Laughlin, Alex & Co.....	31	New Process Raw Hide Co.....	46	Roberts, A. & P. & Co.....	20	Thomson-Houston Motor Co.....	54
Lea, J. Tatnall & Co.....	23	Newton & Shipman.....	19	Roberts, Frank C. & Co.....	32	Tiebout, W. J.....	91
Lean, D. R. Co.....	30	N. Y. Belting & Packing Co.....	40	Roberts Mfg. Co.....	39	Titchener, E. H. & Co.....	11
Leavitt Machine Co.....	71	N. Y. Machinery Depot.....	59	Robinson-Rea Mfg. Co.....	26	Tod, Wm. & Co.....	35
Le Count, C. W.....	94	N. Y. Mallet & Handle Works.....	101	Rogers, The Wm. Mfg. Co.....	80	Toledo Bicycle Co.....	85
Leechburg Foundry & Machine Co.....	30	N. Y. Powder Co.....	25	Rollason Gas Engines.....	36	Toledo Block Works.....	93
Leffel, W. C. Co.....	47	Niagara Stamping & Tool Co.....	48	Rose Polytechnic Institute.....	63	Toomey, Frank.....	60
Le Massena, C. E. & Co.....	56	Nicholson File Co.....	74	Rouse-Duryea Cycle Co.....	67	Torrey, J. R. Razor Co.....	77
Leng's, Jno. S. Son & Co.....	110	Nicolls, Wheeler & Co.....	17	Rowland, Wm. & Harvey.....	110	Totten & Hogg Iron and Steel Fdry. Co.....	25
Leonard, B. E.....	97	Niles Tool Works.....	60	Russell, Burdsall & Ward.....	110	Townsend, W. P. & Co.....	102
Leonard, J.....	22	North Bros. Mfg. Co.....	18	Russia Cement Co.....	69	Trenton Iron Co.....	4
Leonard, T. F.....	97	North Bros. Mfg. Co.....	67	St. Joseph Pump Co.....	71	Trenton Malleable Iron Co.....	27
Leschen, A. & Sons Rope Co.....	6	Northampton Cutlery Co.....	78	St. Louis Bronze & Aluminum Works.....	2	Threthewey Mfg. Co.....	32
Levis, Henry & Co.....	22	Northampton Emery Wheel Co.....	56	Sabin Machine Co.....	4	Trimont Mfg. Co.....	96
Lidgerwood Mfg. Co.....	110	Northwest Malleable Iron Co.....	26	Salem Foundry & Machine Shop.....	54	Troy Nickel Works.....	77
Lindsay, Jas. G. & Co.....	18	Norton Emery Wheel Co.....	56	Salem Wire Nail Co.....	13	Tucker & Dorsey Mfg. Co.....	82
Link-Belt Engineering Co.....	43	Norton & Jones Machine Tool Works.....	39	Samson Cordage Works.....	1	Tuck Mfg. Co.....	5
Lockhart Iron & Steel Co.....	23	Norwalk Iron Works Co.....	38	Samuel, Frank.....	17	Tudor Iron Works.....	1
Lodge & Davis Machine Tool Co. 58&59		Nourse, Fred Co.....	5	Sands, Thomas.....	63	Tyler Wire Works Co. W. S.....	66
Lodge & Shipley Machine Tool Co. 57		Noyes, B. B. & Co.....	79	Sargent Co.....	28	Underhill, Clinch & Co.....	76
Long & Allstatter Co.....	33	Nubian Iron Enamel Co.....	65	Saunders Sons, D.....	47	Union Fdry & Mch Co.....	36
Loring, Chas. Carroll & Co.....	109	Obermayer, S. Co.....	29	Scattergood, H. W.....	65	Union Mfg. Co.....	50
Lovell, Jno. P. Arms Co.....	85	Ogden & Wallace.....	22	Schaeffer & Co.....	99	Union Metallic Cartridge Co.....	1
Lovell Mfg. Co., Ltd.....	65	Ohio Lantern Co.....	80	Scheeler & Sons.....	9	Unity Door Check Co.....	91
Lovell, Tracy & Co.....	95	Oil Well Supply Co.....	31	Schmitz, E. Lothar.....	76	Universal Sad Iron Co.....	71
Lovegrove & Co.....	60	Old Dominion Iron & Nail Works Co. 95	95	Schneider & Trenkamp Co.....	88	Valentine, M. D. & Bro.....	28
Ludlow-Saylor Wire Co.....	7	Osborn, G. Edw. & Co.....	35	Scott, Geo. M.....	47	Valley Pump Works.....	38
Lufkin Rule Co.....	71	Ossawan Mills Co.....	91	Scoville Mfg. Co.....	2	Van Dorn Iron Works Co.....	9
Lukens Iron & Steel Co.....	17	Ostrander Fire Brick Co.....	28	Scranton Forging Co.....	94	Vanderbilt Sash Balance Co.....	91
Lundberg, Gustaf.....	19	Ostrander, W. R. & Co.....	96	Scranton Supply & Machine Co.....	61	Van Wagoner & Williams Co.....	110
McCabe, J. J.....	59	Otto Gas Engine Works.....	36	Seaman, Sleeth & Black.....	25	Victor Mfg. Co.....	91
McCaffrey File Co.....	74	Ford Iron & Nail Co.....	11	Security Warehouse.....	11	Vulcan Iron Works.....	25
McClure, Amsler & Co.....	30	Packer, C. W.....	67	Sellers, Wm. & Co.....	56	Wadham's Oil & Grease Co.....	36
McCoy, Jos. F. & Co.....	88	Palmers & De Mooy.....	26	Schaeffer & Co.....	99	Wals & Roos, P. & S. Co.....	45
McFarland, Wm.....	4	Palmer Hardware Mfg. Co.....	92	Scheeler & Sons.....	9	Wallace, Wm. H. & Co.....	22
McGowan, J. H. & Co.....	38&101	Pancoast & Maule.....	49	Shepard, Sidney & Co.....	99	Wardlow, S. & C.....	19
McIlvain, Wm. & Sons.....	27	Parry Mfg. Co.....	83	Shipman Engine Co.....	36	Washburn & Moen Mfg. Co.....	4
McKay, Jas. & Co.....	18	Passaic Art Casting Co.....	3	Shubert & Cottingham.....	93	Washburn Shops.....	51
MacKellar Fdry. Facing & Supply Co. 29		Passaic Rolling Mill Co.....	22	Shultz Belting Co.....	1	Waterbury Brass Co.....	2
McKinney Mfg. Co.....	89	Paxson, J. W. & Co.....	29	Sibell, Geo. H. & Co.....	60	Waterbury Farrel Foundry & Machine Co.....	38
McLeod, John.....	38	Peabody & Parks.....	87	Sibley & Ware.....	46	Waterbury Machine Co.....	49
McLeod & Henry Co.....	28	Peck, A. G. & Co.....	110	Sickles, Sweet & Lyon.....	75	Watson & Stillman.....	44
McNab & Harlin Mfg. Co.....	35	Pedrick & Ayer.....	42	Sidney Steel Scraper Co.....	99	Webster, Warren & Co.....	34
Machinists' Supply Co.....	60	Mackay, Jas. T.....	35	Sigourney Tool Co.....	45	Weiland, Chas.....	62
Mackay, Jas. T.....	35	Pennsylvania Diamond Drill & Mfg. Co. 37	37	"Silver Finish".....	5	Wellman Iron & Steel Co.....	17
Mahoning Foundry & Machine Shop 32		Pennsylvania Steel Co.....	59	Silver Mfg. Co.....	92	Wells Bros. & Co.....	51
Mahoning Valley Iron Co.....	22	Perkins, H. H. Mfg. Co.....	82	Simonds Mfg. Co.....	72	West Coxsackie Iron Fdy.....	24
Main Belting Co.....	40	Perry, W. H. & Co.....	61	Singer, Nimick & Co.....	23	Western Wheel Works.....	85
Mann, Edwin R. & Co.....	18	Philadelphia Drop Forge Co.....	27	Skelly, J. W. & Son.....	92	Wetherell Bros. & Co. 19&3	19
Manning, Maxwell & Moore.....	52	Philadelphia Engineering Wks.....	29	Skinner Chuck Mf....	50	Wetherhill, Robt.....	109
Manville Machine Co., E. J.....	57	Phillips, E. & Sons.....	13	Smith & Egge Mfg. Co.....	51	Wharton, Jos. S. Lovering.....	84
Mansfield, H. H.....	60	Phillips Townsend & Co.....	6	Smith, H. D. & Co.....	95	White, L. & I. J. Co.....	77
Maris & Beekey.....	55	Phoenix Horseshoe Co.....	95	Smith, J. D. Foundry Supply Co.....	29	White Mfg. Co.....	64
Maslin, J. & Son.....	38	Phoenix Iron Co.....	17	Smith Friction Drill and Tool Co.....	48	White Mt. Freezer Co.....	67
Mason Regulator Co.....	100	Phoenix Iron Works Co.....	37	Smith, Oliver A.....	98	Whitehead Bros. Co.....	29
Mast, Foos & Co.....	6	Phosphor Bronze Smelting Co.....	3	Smythe, S. R. Co., Inc.....	31	Whitlock Coil Pipe Co.....	34
Matthai, Ingraham & Co.....	1	Pickards, Brown & Co.....	21	Sommer's Son, John.....	110	Whitman & Barnes Mfg. Co.....	74
Matthiessen & Hegeler Zinc Co.....	2	Pike Mfg. Co.....	24	Southwark Foundry & Machine Co.....	36	Whitney, A. R. & Co.....	18
Maurer, H. & Son.....	28	Pilling & Crane.....	56	Speidel, J. G.....	55	Whitney, A. & Sons.....	22
Mayhew, H. H. Co.....	80	Pittsburgh I. & S. Eng. Co.....	30	Speirs, J. C. & Co.....	25	Whitton, D. E. Mch. Co.....	50
Merrill Bros.....	18	Pittsburgh Mfg. Co.....	43	Spencer's I. S. Sons.....	27	White Mt. Freezer Co.....	67
Merrill Mfg. Co.....	47	Pittsburgh Reduction Co.....	60	Springfield Brass Co.....	38	Whitehead Bros. Co. 29	29
Merriman, A. B.....	44	Place, Geo.....	61	Springfield Emery Wheel Co.....	56	Whitlock Coil Pipe Co.....	34
Michigan Emery Wheel Co.....	56	Plumb, Fayette R.....	78	Standard Fdry. & Mfg. Co.....	27	Whitman & Barnes Mfg. Co.....	74
Miles, F. S.....	13	Miller & Atwood Mfg. Co.....	2	Speidel, J. G.....	55	Whitney, A. R. & Co.....	18
Miller & Van Winkle.....	4	Miller Lock Co.....	91	Spelrs, J. C. & Co.....	25	Whitney, A. & Sons.....	22
Millers Falls Co.....	68&110	Plymouth Mills.....	11	Spencer's I. S. Sons.....	27	Whitton, D. E. Mch. Co.....	50
Milne, A. & Co.....	20	Pollock, W. B. & Co.....	35	Springfield Horse Shoe Co.....	94	White Mt. Freezer Co.....	67
Milton Mfg. Co.....	101	Poole, Robt. & Son Co.....	37	Standard Steel Casting Co.....	110	Whitehead Bros. Co. 29	29
Miner & Peck Mfg. Co.....	45	Pope Mfg. Co.....	67	Standard Tool Co.....	52	Whitlock Coil Pipe Co.....	34
Mohr, J. J.....	18	Popping, J.....	63	Standard Tool Co.....	69	Whitman & Barnes Mfg. Co.....	74
Moline Elevator Co.....	55	Port Chester Bolt & Nut Co.....	102	Stanley Rule & Level Co.....	109	Whitney, A. R. & Co.....	18
Morten Mfg. Co.....	42	Portsmouth Wrench Co.....	95	Stanley Works.....	67	Whitney, A. & Sons.....	22
Morton, Thos.....	90	Pottstown Iron Co.....	20	Stark Mch. & Tool Co.....	44	Whitton, Bothwell & Co.....	30
Moseley Iron Bridge & Roof Co.....	6	Pottsville Iron & Steel Co.....	17	Starrett, L. S.....	75	Williams, J. H. & Co.....	96
Morrison, Robert.....	33	Powell Planer Co.....	44	Steam Gauge & Lantern Co.....	68	Williamson, C. T. Wire Nov. Co. 109	109
Morse Twist Drill & Machine Co.....	52	Pullman Sash Balance Co.....	91	Stewart & Baker.....	91	Williamsport Wire Rope Co.....	6
Morse, Williams & Co.....	55	Q & C Co.....	11	Stiles & Parker Press Co.....	41	Wilmet & Hobbs Mfg. Co. 1&3	1&3
Moorhead-McCleane Co.....	23	Prentiss Tool & Supply Co.....	59	Stocking, E. B.....	6	Wilson, E. H. & Co. 49&110	18
Morgan Construction Co.....	4	Prentiss Vise Co.....	70	Storm Mfg. Co.....	76	Wilson, John.....	76
Morgan Spring Co.....	4	Presbrey Stove Lining Co.....	28	Stover Novelty Works.....	47	Wilson, J. Fred.....	101
Morrison, Robert.....	33	Pullman, J. Wesley.....	23	Stoves Arms & Tool Co.....	84	Wilson, W. A.....	44
Morse Twist Drill & Machine Co.....	52	Pullman Sash Balance Co.....	91	Stow Mfg. Co.....	52	Winslow, Sm'l, Skate Mfg. Co.....	83
Morse, Williams & Co.....	55	Q & C Co.....	11	Stow Flexible Shaft Co.....	52	Wires Goods Co.....	6
Morton Mfg. Co.....	42	Queen Anne Screen Co.....	87	Stringfellow, T. B. & Co.....	71	Wister, Francis.....	27
Morton, Thos.....	90	Quint, A. D.....	46	Stork Mfg. Co.....	76	Wister, L. & R. & Co.....	22
Moseley Iron Bridge & Roof Co.....	6	Railway Speed Recorder Co.....	72	Stover Novelty Works.....	47	Witherow, Jas. P. Co.....	30
Motley, Peter.....	92	Rainey, W. J.....	1	Stover Mfg. Co.....	92	Wolcott & West.....	62
Mount Carmel Bolt Co.....	109	Rand Drill Co.....	37	Stow Mfg. Co.....	52	Wolff, R. H. & Co. Ltd.....	5
Myers, F. E. & Bro.....	70	Randolph & Clowes.....	1	Stow Mfg. Co.....	52	Wollensak, J. F. 74&93	18
Myers, H. M. Co.....	76	Read, Wm. & Sons.....	109	Stringfellow, T. B. & Co.....	71	Wood, Alan & Co.....	18
National Horse Nail Co.....	95	Reading Hardware Co.....	90	Stuart & Peterson Co.....	87	Wood, R. D. & Co.....	27
National Pipe Bending Co.....	34	Reeves, Paul S.....	110	Sturtevant, B. F. Co.....	46	Wood, R. Dewees Co.....	23
National Saw Co.....	72	Rely, J. W.....	20	Supplee Hardware Co.....	100	Woodruff Mfg. Co.....	53
National Screw & Tack Co.....	12	Reliance Wire Wks Co.....	8	Sweat Mfg. Co.....	98	Worcester Mch. Screw Co.....	102
Naylor & Co.....	22	Reynolds & Co.....	11	Sweetser, W. A.....	29	Worthington, Henry R. 38	38
Newark Machine Tool Works.....	66	R.I. Perkins Horse Shoe Co.....	94	Swindell, W. & Bros.....	31	Wrenn, Whitghurst & Co. 63	63
New Castle Wire Nail Co.....	13	Rice, C. F.....	63	Syracuse Specialty Mfg. Co.....	99	Wright & Colton Wire Cloth Co. 8	8
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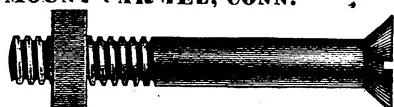
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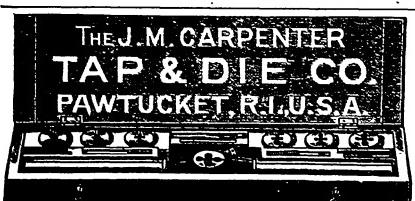
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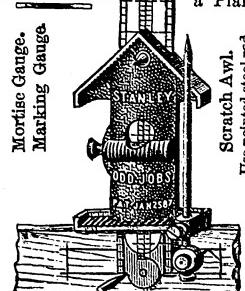
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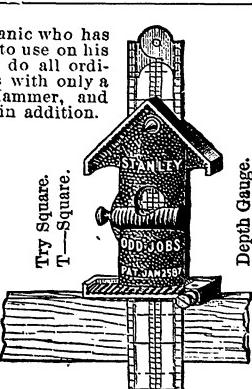
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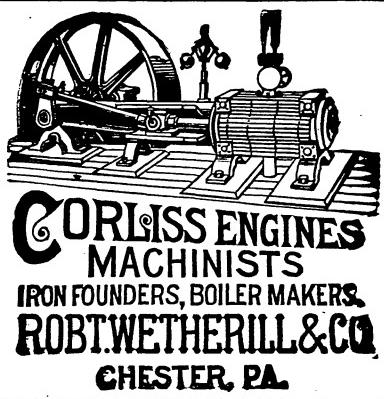
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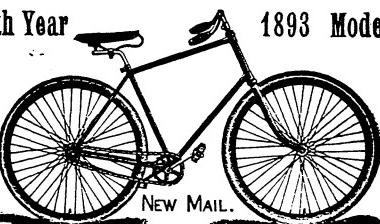


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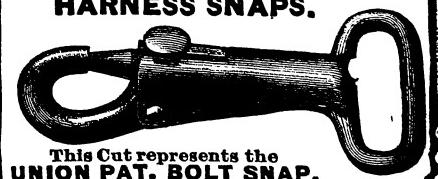
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# THE IRON AGE

THURSDAY, JUNE 29, 1893.

## The British Patent Office.

The tenth report of the Controller-General of the English Patent Office shows that during last year applications were made for 24,171 patents, 19,269 single designs and 258 sets of designs and 9101 trade-marks. The gross receipts in 1892 were \$959,323, against an expenditure of \$464,946, both amounts being a good deal smaller than in 1891. While the number of applications for patents continues to increase, the percentage of patents granted is shown to be gradually diminishing. "This," says the report, "is doubtless in some measure owing to the advantage taken

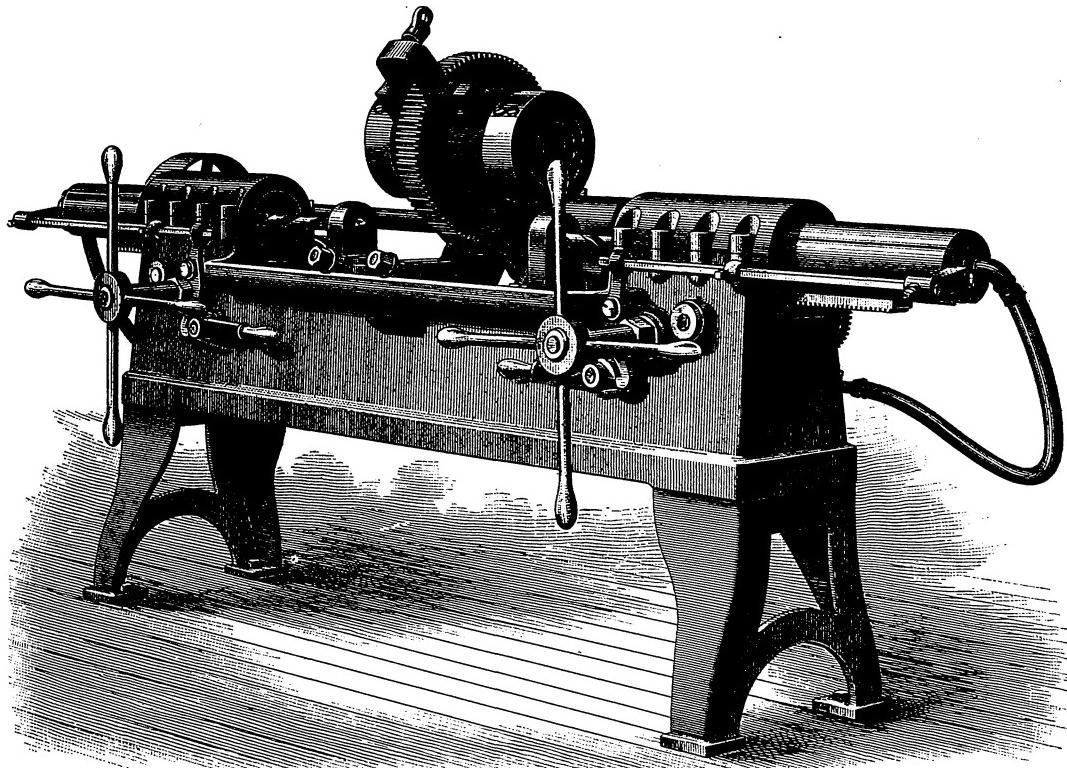
from \$26 40 to \$28.80 per ton, or just one-half of the cost some four years ago. The dearth of orders is beginning to be seriously felt in the shipyards on the Clyde.

## Duplex Drilling Machine.

This machine is the invention of W. A. McCool, manager of the Union Drawn Steel Company of Beaver Falls, Pa. An adequate idea of the advantages of this design may be obtained from the fact that at the above works this machine has drilled a 1½ inch hole through a bar 3½ inches in diameter and 18 inches long in nine minutes,

rack, as shown in the perspective view, extending into the slot and engaged by a pinion on a transverse shaft provided with a hand wheel, *cc*, by means of which the drill slides are operated. It is important to notice that the drills have only a sliding movement toward and from the work and that the racks of the drill slides form locks in the slots of the tool heads to prevent the tool slides from turning. Provision is made for supporting the inner ends of the drills in standards secured to the frame.

The work to be drilled is supported in a line with and between the drills in a swinging head formed of a single casting and containing a revolving duplex chuck head. This swinging head



DUPLEX DRILLING MACHINE.

by inventors of the provisions of section 4 of the Amendment act of 1885, which prescribed that abandoned applications should at no time be open to public inspection or be published by the Controller. Consequently inventors, who may be unable to proceed with their applications within the term first allowed by law, are now in a position to renew their applications from time to time without risk of losing their rights, which would have taken place under the law as it stood before the amendment above mentioned. However, notwithstanding the diminished proportion of applications which obtain patents, the total number of patents issued annually has considerably increased since 1885."

As an instance of dwindling profits in the British shipbuilding industry, a Glasgow correspondent of *Industries* reports that ordinary cargo steamers, replete with modern appliances, are now contracted for at prices ranging

which is certainly a very remarkable speed for drilling. The machine is designed particularly for drilling billets and ingots preparatory to their manufacture into gun barrels and other hollow articles.

In general the machine consists of a frame upon each end of which is placed a drill-holding device. Centrally between these two drill heads is a rotating duplex chuck holding the piece to be drilled. The duplex chuck is carried by a swinging head, whereby the work is held in alignment with the drills. The chuck can be swung over out of the way of the drills to place and remove the work into and from the chuck and to present the work at once properly to the drills.

Each tool head, *a a*, is bored out centrally in a horizontal, longitudinal line for the reception of a cylindrical slide, *b b*, within the inner end of which the drill is secured. The bore of each tool head has a longitudinal bottom slot and each tool-carrying slide has a bottom

is mounted on a horizontal shaft, shown in the plan, which forms the driving shaft of the machine and is driven by the pulley shown. The swinging head has a central bore which is coincident with the axes of the drills and is of a diameter sufficient to receive and form the bearings of the duplex chuck *d d*, the cylindrical body of which is fitted in the central bore and has an enlarged head which forms a chuck at each end, within which are fitted the jaws for holding the work. The swinging frame, which is shown in raised position in the perspective view, is slotted transversely to receive a gear wheel formed on the body of the chuck. A pinion on the driving shaft engages this gear to operate the chuck and article being drilled. By means of the hand wheels *c c* the tool slides can be operated independently to bring the drills up to the work.

We will now describe the method of operating the drill slides by power: As stated, the drill slides are operated by

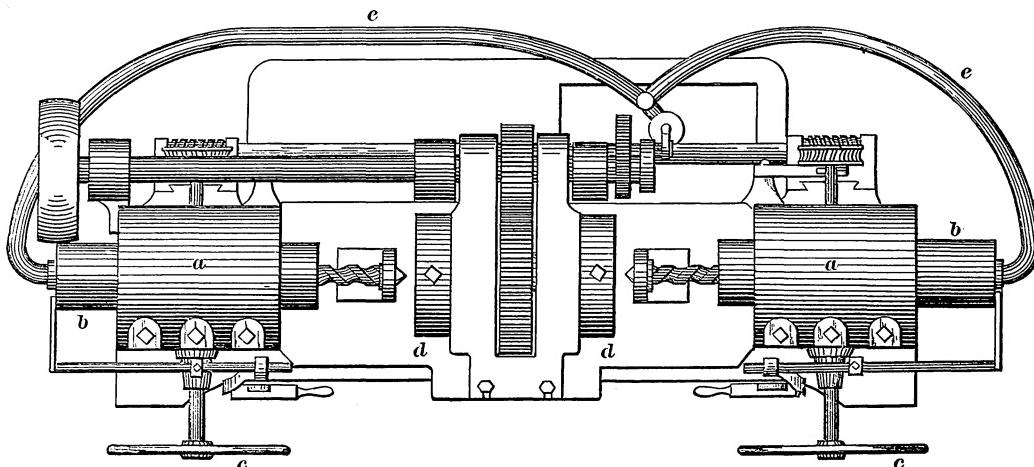
pinions on the hand wheel shafts. Referring to the plan view, it will be seen that each of these shafts has a worm gear on its rear end which engages with a worm on a shaft placed parallel with the bed. Both of these shafts are mounted at their gear ends in boxes adapted for vertical adjustment. Each box has its shaft, one of which has a right and the other a left worm gear, and these shafts at their other ends are jointed to a short shaft. The jointing of these shafts is so made as to permit their outer ends to be raised and lowered to engage or disengage their worms with the worm gears on the hand-wheel shafts. By means of gearing these jointed shafts are rotated by the main driving shaft. Provision is made for automatically stopping the feed of the drills. These automatic stops can be so set that one of them will be tripped before the other, when its drill can be drawn back by the hand wheel, leaving the other drill to continue its feed so as to drill the bore completely through the work. This practically makes the duplex drill two

tails regarding each proposition presented, and the reasons for the selection made. The amount of the Huyett & Smith Mfg. Company's bid was \$22,927. The bids ranged in price from \$17,265 to \$30,060.

#### The Manufacture of Iron in India.

In a paper recently read before the British Society of Arts on "The Manufactures of India: Their State and Prospects" Sir Juland Danvers, K.C.S.I., referred to iron as being one of the most important manufactures from which great future benefit to the country may be expected. That the ore exists in many parts of India, this authority says, has been abundantly proved, and evidence exists that for ages past iron has been made by means of small charcoal furnaces and worked up in various metal industries. The pillar at the Kootub, near Delhi, is an example of an iron structure erected 1000 or 1200 years ago. Attempts have, from time to time, been made by enterprising

have been erected and a considerable quantity of pig iron has been produced. Here, however, the first attempts were financially unfavorable and the promoters found themselves unable to continue their operations. The works were then taken over by the Government, who, after keeping them up for a time and turning out 8000 tons of pig iron per annum, re-transferred them to private agency. A company was formed in 1889, under the name of the Bengal Iron and Steel Company, with a capital of \$720,000 and borrowing powers. One condition of the lease was that the plant should be so improved and extended as to insure an output of at least 15,000 tons of pig iron per annum. Since the works have been taken over, the two blast furnaces have been reconstructed on improved principles, and a new one, 60 feet in height, has been built. The furnace is said to be producing close upon 2000 tons per month. When the three furnaces are at work they will be able to produce from 45,000 to 50,000 tons per annum. The fuel used is coke and anthracite coal, in



DUPLEX DRILLING MACHINE.—*Plan View.*

separate and distinct drills, both operating together but either independently for the purpose of completing the bore.

Provision is made for automatically supplying oil to the drills. This oil is supplied by a pump through the pipes *e e*, the drill slides *b b* and the drills, the shanks of which are bored.

The cylindrical form of the bearings for the drill slides and the manner of locking them from turning render them very firm and solid in their movements and preserve the perfect alignment of the drills; while the manner of mounting the duplex chuck gives the advantage of placing the billet in alignment with the drills by a swinging movement of the head in which the duplex chuck has a bearing from one chuck jaw head to the other.

A meeting of the Board of Education in Detroit, Mich., was held on the evening of June 15, to consider the report submitted by Mr. W. J. Baldwin, member of the American Society of Civil Engineers, upon the plans and specifications submitted by numerous competitors, for the heating and ventilation of the new Central high school building. Mr. Baldwin recommended to the board the acceptance of the proposition submitted by the Huyett & Smith Mfg. Company of Detroit. The report was an exhaustive one, going into de-

Englishmen to start iron works. Some years ago, Beyapore, in the Malabar district of Madras, was the scene of one of these endeavors.

In the Nerbudda Valley and at Chanda efforts were also made; and in Kumaon furnaces were erected for the purpose of smelting iron ore. But in all these cases the works, after considerable expenditure, ended in financial failure and were abandoned. The cost of production was too great, and the high charge for conveyance by imperfect communications made it impossible to supply the material at such prices as would satisfy the market. Railways are now, however, opening up the mineral resources of the country, and the prospect of coal, as well as iron, becoming a large industry is yearly improving. The supply of coal is rapidly increasing. In 1881 there were 47 collieries open; in 1890 the number had increased to 82, and the quantity produced rose from 997,730 to 2,168,520 tons.

To insure the successful establishment of iron works, the ore must not be far removed from coal fields or from lime, and the means of transporting the iron to a near market must be at hand. This is the case in various districts of Bengal, and in one particular instance, where railway communication exists, a decidedly successful effort has been made. At Barrakur, on the East Indian Railway, blast furnaces

about equal proportions, and both are available in abundance. The flux is not so easily obtainable, the quality of the limestone in the immediate neighborhood of the works being inferior, and that used has to be brought a long distance at considerable expense, but hopes are entertained that by further explorations this difficulty will be overcome. Foundries for the casting of pipes and sleepers have been constructed with all the new appliances adopted in similar works in England. During the three years ended October 1, last, since the company commenced operations, the works have yielded 8433, 8420 and 10,046 tons per annum respectively. In the present year it is expected that 25,000 tons will be produced. The quality of the iron is reported to be good and the Bengal pig has become popular. The East Indian Railway Company have been using 800 tons per month in the manufacture of cast iron sleepers, and other railways have taken 500 tons per month. There has also been a demand for pipes, of which 4000 tons were cast last year, and the satisfaction of the Chief Commissioner of the Central Provinces, Sir A. P. MacDonnell, was expressed at the satisfactory manner in which the company had executed a contract for the Raipur Water Works. It is encouraging to the Indian Government, after the struggles which this industry has

gone through, to find this enterprise in so satisfactory a position. There appears to be no reason why similar works should not spring up in other parts of the country where railways will, in time, open up coal and iron fields and create local demands. It is not likely, however, that any supply will for a very long period appreciably diminish the demand for English made iron.

#### The Bessemer Medal.

At a meeting of the Council of the American Society of Mechanical Engineers, held June 22, the following resolution was passed on the presentation to John Fritz of the Bessemer medal by the Iron and Steel Institute of Great Britain:

It having come to the knowledge of the Council of the American Society of Mechanical Engineers that the Iron and Steel Institute of Great Britain has recently bestowed upon a member and ex-vice-president of the society the Bessemer medal for 1893, the council avail themselves of this occasion to tender their congratulations to John Fritz on the receipt of such a well-merited and distinguished honor from his friends beyond the sea.

The council desires to commend the excellent judgment of the Iron and Steel Institute in selecting for this honor one who by his genius, skill and industry through many years has done so much toward the improved metallurgical processes, and especially in the construction of the mechanical appliances now in use in the manufacture of iron and steel in this country, as to have materially aided in making this industry the important one it now is.

That in conferring the Bessemer medal in this year of our Columbian Exposition upon an American engineer, the institute has in a pleasant way added further evidence of the kindly feelings and hearty good fellowship which in so many ways has of late marked the action of engineering societies and engineers in this country and in Europe, and we cannot but believe courtesies like this tend to a closer union of engineers in all lands; that while it is the mission of our profession to compel the rude forces and materials of nature to contribute to the welfare and comfort of mankind, it is their mission as well to bring in closer touch nations and individuals, and in this way aiding in a degree it would seem no other profession can to bring about those better days which in all ages past the world has hoped and struggled for.

The New York Academy of Medicine's special committee on quarantine precautions has drafted a bill for the establishment of a national quarantine, which would have supreme control of the quarantine in all ports, thus removing this important matter from the influence of local politics. The committee is anxious to have this measure presented to Congress with the indorsement of the entire medical faculty of the country.

The United States Commissioner of Navigation, in his report for the year ending June 30, 1892, gives the total tonnage of the Lakes fleet, including steamers and sailing vessels, canal boats and barges, as 1,183,582.55, showing an increase of 2.5 per cent. over the figures of 1891. The total number of bottoms was 3657, against 3600 in the previous year.

## WORLD'S FAIR NOTES.

### J. H. Harris on the Fair.

The friends of J. H. Harris of Henry R. Worthington, pump manufacturer, will gather with delight from the following sprightly letter, written to an associate, that his serious illness, from which he is recovering admirably, has not dampened his spirits or impaired his keen judgment:

. . . Yesterday, however, I braced up, and, by the aid of a roller chair and the help of a stout man-at-arms, visited in a very general way the main building of Manufactures and Liberal Arts, and took a flying trip through the Transportation Building, ending up with a portion of the day on the Midway Plaisance. To attempt to describe the interior of the buildings would be equally as difficult, if not as thankless a task, as to describe the exteriors. The fact of it is, the whole exposition is beyond the power of language to describe. The only advice that I would have to give to any one that can afford to go to Chicago is, that they cannot afford to stay away. I look upon the whole thing as educating and as elevating; yet, it is on so grand a scale, there are so many things to see, and so many, having been seen, to inspect closely, that if one should attempt to take the entire burden over, it would be a task of a lifetime; in fact, the exposition can be compared to a very extensive library. You may admire the interior of the building; the beauty, solidity and artistic getting up of the binding; but to read all of the books would be beyond either your strength or possibly your desires. So it is with the exposition. You can only take it in here and there and be satisfied with a glimpse, trying, after having got over the glamour that surrounds the whole show and upon returning to the effete East, to digest and analyze what you have seen. No man, if he be a man in every sense of the word, and especially no American, can but feel very proud of his country and of his countrymen when he looks about and sees what they have accomplished, and especially when he considers the time it has taken to bring this great exposition to its present state of completion. And yet, if he be a broad-minded man, it seems to me that he will have to concede that, without the help of our friends from the other side, the buildings would have been a much larger part of the show than they are now. Certainly the decorative part of the exposition has been furnished by our friends from across the water; but when we come to leave decorative and textile arts and "sich like" out of the question and go into the Transportation Building, we have no reason to be ashamed of what we have accomplished in one short generation; for I remember the opening of the railway from Troy to Albany, with strap rails, a teakettle of an engine, the rather dangerous habit these rails had of crawling up and entering the rear end of the train when the speed of the locomotive was increased to an average of ten miles an hour; and if at my age I can look back upon an experience of that kind in the early days of railroading, so to speak, before the T rail was adopted, how must the magnificent show of railway rolling stock on view at the Transportation Building strike those who have more years and more experiences than I have in retrospection? One can read in

the advance of the art of railway construction and operation, a good deal of the history of the past half century, but can also indulge in what good old Dr. Jones of Springfield used to call a "retrospective glance into the future," and wonder if another fifty years will show such wonderful strides in locomotion as has the past.

Machinery Hall has only been seen, so far as I am concerned, around the Worthington exhibit and up to the Allis engine. The latter, so far as spectacular value is concerned, seems to me not the equal of the Corliss engine on exhibition in 1876 at Philadelphia, yet I presume that from your more experienced engineering eye there would be attractions in the Allis engine not yet disclosed to my vision. So far as my observation goes, and it is not very far, for I have been confined very largely to our own exhibit, the difference between the mechanic arts of now and 1876 has been largely in growth rather than in novelty. We are compounding engines more than then, running them at higher rates of piston speed, giving up more to European ideas of finish, but beyond that I am not prepared to say that there have been many radical changes, except along the lines of electricity.

After all, the greatest study of the exposition are the people who visit it, and there are some rare specimens. Language fails to convey the impressions I have received from the people I have met, but without wishing to be hypercritical, I would remark that occasionally it does seem as if business at dime museums had become so poor that they had discharged most of their freaks and a large majority had come to Chicago to see the wonders on view here. Of course, this applies to separate and individual specimens; the great majority of the people are what all American crowds are—self-respecting, orderly, intelligent and men and women that no one can fail to be proud of. I have as yet to see the first drunken person in or about the grounds. Of course, there is rather more latitude and freedom of movement personally here than would have been found among our "culcha'ed" people in New York, but then I would remark that here they have no Ward McAllister to tone them down, and no Oliver Sumner Teall to keep them toned when McAllister has pitched his tuning fork. As a matter of fact, human nature is about the same here as elsewhere.

One of the greatest naval disasters of the century occurred last week when the British battle ship "Victoria" was run into by one of her consorts during the performance of fleet maneuvers. The vessel was struck on the starboard bow by the ram of the "Camperdown" and capsized in a few minutes, turning bottom upward and carrying down with her the admiral commanding and over 400 officers and men. Experts in naval architecture think that while showing the deadliness of the ram in maritime warfare the fatality has established the undesirability of building war vessels with longitudinal bulkheads, by the use of which the admission of a volume of water on one side, coupled with the top-heaviness always characteristic of fighting ships bearing heavy armament, is certain to cause them to overturn, as in the present case. It is contended that had the "Victoria" been constructed with transverse bulkheads, dividing the vessel into several compartments across her beam, she would not have turned

turtle, nor would she have sunk so quickly, in addition to which the lives on board would probably have been saved.

## Artistic Wrought Iron.

### IV.

#### Wrought-Iron Work in New York.

The number of shops in the United States from which artistic wrought-iron work is being sent out is as yet limited. The concerns engaged to-day in this special branch of industry—at least, those which confine themselves to it—may, we believe, be counted on the fingers of both hands. We propose now to take a couple of examples of wrought-iron smitheries which have come lately under our notice, as types of the industry as it exists in the city of New York to-day.

In one of these establishments the craft is carried out on an extensive scale, with numerous forges and a large staff of workmen, together with every modern appliance in the way of machinery for reducing labor and economizing time. This shop will serve as a type of the smithery in its most modern form. The other type more nearly approximates to the conditions under which art work in iron was produced in former times on the European Continent. Here the proprietors of the shop are themselves artist-workmen, laboring with their own hands at forge and bench, while the work is developed with fewer accessories and in a more primitive fashion than is the case in the larger manufactory. In both cases the work turned out is the best of the modern kind, so that these two establishments may be fairly taken as good illustrations of the places where the ancient craft of decorative wrought-iron working is now getting its impulse on this continent.

#### A Modern Art Smithery.

The first to which we will refer is the large establishment of John Williams, on West Twenty-seventh street, New York City, close to the North River. At these forges some of the best wrought-iron work yet produced in America has been made. Here is founded every conceivable kind of architectural and decorative work that can be wrought in iron, from the massive gates which command the entrance to the palace of a millionaire to the smallest of decorative objects—photograph frames, candlesticks and even the small broad-headed nail's which, when decorated, form a detail in some larger work. Much of the work done here is from designs by foremost artists and architects of the United States; the rest is designed on the spot, usually by the superintendent of the works, H. B. Stillman, who has done much to establish the reputation of this branch of art in the country. All the work is carried out under his eye, and is stamped to some extent with his individuality. Mr. Stillman is an enthusiast in the wrought-iron art, and takes the greatest pride in the work put out of the establishment under his control.

A great smithery is this. A dozen glowing forges with a busy crowd of smiths always at work at anvil and bench testify that there is no lack of business being done. Indeed, we are told the difficulty is to keep abreast of the increasing orders for this class of work, so marked is the growth of public taste in decorative iron. So the clang of hammers goes on all day and

the showers of fireworks fly from the red bits of iron as the workmen beat them into things of grace and utility.

The workers here are almost all of foreign birth, Germans and Belgians predominating. These men seem to

workman, for in the fashioning of wrought-iron art work brains count for more than muscle, and a trained eye and hand are worth even more than industry and hard work. These craftsmen uniformly appear to take a pleasure and



*Fig. 16.—Welding Scroll Work.*



*Fig. 17.—Heavy Welding.*

#### ARTISTIC WROUGHT IRON.

have an innate taste, which in several cases has been stimulated by an art training. Most of them are young, and they appear to be men of more than ordinary intelligence. Indeed, it needs education to be anything of an artist

pride in their work, although in some instances it is somewhat monotonous. For example, one man may be turning out several hundreds of objects, details of some large design, all of which are exactly similar, or as nearly so as eye

and hand can judge and fashion them. Yet he takes as much pains with each as if it were the only one of its kind he had to make.

rods and on the other a heap of twisted blue-black spirals, with one or two of a dull red color interspersed. These little spirals, about 4 or 5 inches long, are to

mer, a pair of nose pliers and pincers. Taking a bar of iron, he thrusts one end into the glowing coals. It is soon taken out red hot and transferred to the anvil, where it is beaten out with the hammer for a few seconds. After a second heating it is again smitten out until it becomes considerably elongated, and tapers to the end like a rat's tail. After measuring to compare its length with that of a pattern, the bar is bent, after a third heat, and rounded into a graceful curve over the edge of the anvil, the hammer giving it a constant gentle tapping. Additional curves are imparted to it with the hammer, each being smaller than the last, until it has been thus treated four or five times. The spirals are next hammered down into a tight coil, like the convolutions of a shell, get another firing, and then the pincers are brought into play. The coils are forced apart and drawn out until they form a tapering spiral. A deft touch of the pliers on the rat-tail point gives it its exact kink, and the object is complete. Each piece is compared with a pattern as to length, and then cut off the rod and thrown on the heap. All is done by eye, and the operation of making one spiral takes but three or four minutes. These objects will be presently welded on to the completed gate in another part of the shop.

#### Welding.

The man at the next forge, illustrated in Fig. 16, is working with flat iron, the process being very similar to that just described. He is beating the red-hot iron into fine ends, curling it round, and then welding three or four pieces together in graceful fashion to form the end of some large scroll work in a grille or gate. His work, too, is carried out by eye and with the help of a hammer only. Each finished piece is, of course, compared with a drawing at the side of the anvil to see if the curved lines correspond with those of the pattern. It should be mentioned that the iron used for the finer kinds of wrought-iron work is exclusively Swedish. This iron has a peculiar toughness combined with pliability which makes it specially adapted to the work. Native iron will not bear the repeated heating and working to which wrought iron is subjected.

The preparation of large pieces of work, such as the great gates which were made here last year for the Vanderbilts' Newport mansion, involves the handling and welding of large heavy pieces of bar iron. In this case two or three men, or more, are employed on the job. An illustration of such work is given in Fig. 17. Here a thick piece of flat bar is being welded on to another piece which has been wrought into a scroll pattern. Such heavy welding demands quickness and accuracy. The ends to be joined are both brought to a high temperature in the fire. They are then laid together, one man holding each portion, care being taken that they are kept steady at the exact angle required. The heavy sledge hammers are brought into play, usually by two men, who strike alternate blows until the junction has been firmly made and the piece has become one homogeneous bar.

The welding process in fine work, such as is shown in Fig. 18, where iron flowers are being fixed on to a wreath, requires extreme dexterity and care. Only the most expert smiths are capable of doing such delicate work. The metal must be at the exact temperature requisite, and the operation must be done with the greatest celerity by the striker. The assistant, too, must exercise great care in holding with the pincers the



Fig. 18.—Fine Welding.



Fig. 19.—Shaping Sheet-Metal Leaves.

#### ARTISTIC WROUGHT IRON.

##### The Forging Process.

It will be interesting to watch the proceedings of one of the smiths. Here, for instance, is a man at a forge who has on one side a small pile of thin iron

form portions of a great design of gates and railings, for which some hundreds of them will be required. Let us see how they are made. The smith has no large battery of tools. On his anvil lies his stock in trade, consisting of a ham-

portion to be joined, so that the branch or spray shall be at the right inclination in regard to the rest of the work. Wonderfully fine work is accomplished in this way. During a recent visit to the shops of John Williams a garland of leaves and flowers was seen, which was destined for the adornment of the Memorial Hall at Philadelphia. This garland, which is to be several yards long, is made entirely of hammered iron, the leaves and petals being of sheet iron, and the remainder of the work of bar metal. It contains wonderfully faithful copies from nature of roses, lilies, pansies, oak leaves and acorns, vine leaves and grapes, apples, bananas, corn, and other fruits and flowers. These have all been made separately and welded on, the whole representing a vast amount of patient labor and manual skill. This wreath is probably one of the most intricate and elaborate pieces of metal work of its kind produced in modern times, and is certainly the best yet done in the United States. The flowers and leaves are hammered out cold, the thicker portions only of stem and fruit being forged.

#### Sheet-Metal Work.

Foliage, decorative scrolls and other broad thin work ornamenting grilles or gates, are usually made of sheet iron up to  $\frac{1}{16}$  gauge, the pattern being cut out squarely with a chisel on the cold sheet, the scolloped edges or indentations being added afterward. When thicker sheet iron is used it is cut hot. This work is done by a different class of workmen to those at the forges. These men, with a variety of tools at the bench, shape the leaves into the curves which give them life and naturalness. A trained eye and hand are requisites. Hammers of various shapes are used. To give the leaf its natural curves and wavy form it is laid on a lead block fixed in the vise, having a hollowed-out cup-like depression. A long-headed hammer, one end of which ends in a round ball and the other in a finer blunted point, is used for this work, the leaf or scroll being hammered on the under side. Then the ribs and flatings are added, with the help of a sharper hammer and a tool with a groove in its head, which is fixed upright into the vise. The veins are marked with a driving hammer, having a wide sharp point. After the beaten work is done on the under side the leaf is turned over to receive the outer markings and veins. This is accomplished with a fine hammer, a graving chisel and punches of various sizes and shapes.

Very deep *repoussé* work can be done with suitable sheet iron. The satyr's head seen on the bench in Fig. 20 is a good example of a deeply depressed piece of work. Ordinary sheet iron would not stand the expansion, but the Swedish metal used is found capable of bearing it even when wrought cold. The nose of the mask in this case projects fully  $1\frac{1}{2}$  inches, and it is made of thin sheet.

Rows of benches are ranged around the shop where men are at work on foliage and scrolls with hammer, chisel and punch, as in Figs. 19 and 20. Some of the "cold" work done here is remarkably beautiful and true to nature. These foliated scrolls form details of grilles and screens, being riveted or welded on to the bars, adding greatly to the decorative effect. There is on the whole a certain conventionality and family likeness among these long and wavy scolloped-edged leaves, but practically no two are precisely alike. The markings are put in much according to the taste of the

workman, and do not follow any hard and fast pattern beyond the broad general line of nature.

#### Grilles and Gates.

In the case of heavy work, such as grilles, balconies, gates, &c., the file

ing frequently made by welding. The intertwined and intricate scroll work and cross bars are fitted together by being sunk into each other. This entails very careful filing and fitting. The piece is placed in the vise, and by means of a hand vise or screw hammer the



Fig. 20.—Finishing Leaves for Grille Decoration.

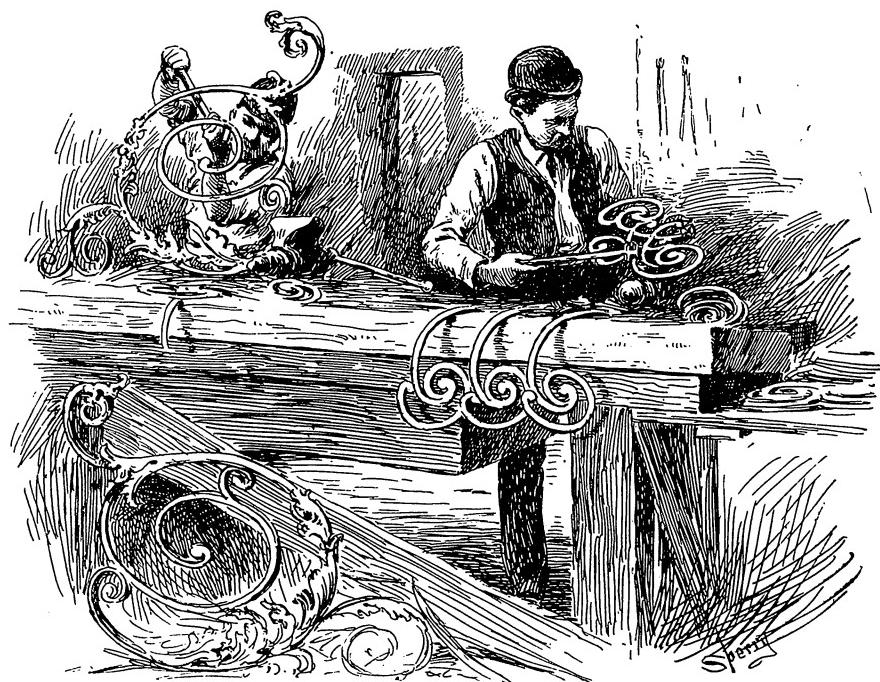


Fig. 21.—Fitting Details of Wrought Iron Scroll Work.

#### ARTISTIC WROUGHT IRON.

comes into play. The various portions as delivered from the forges are assembled and fitted together, in the case of the larger pieces, with the help of screws and rivets, the lesser joints being coaxed and twisted so as to bring the sunk portions into contract. These, having been previously countersunk, are then secured with screws or rivets so carefully

that when finished the junction is almost invisible. The hand vise is also used to bend those portions which are out of their proper lines, and it is extraordinary how much bending and twisting even cold hammered iron will stand. These operations are shown in Fig. 21.

or other means the foliated scrolls, rosettes or other decorations, which give the object its richness and individuality.

It should be mentioned that sometimes, where a number of similar details are required for leaves or other objects, a model is produced in cast iron

calipers, hand saws, taps and drills, countersinkers, hand vises, hammers, breast plates, &c., are used by them. Naturally in a large modern smithery, such as the one we are describing, machinery is utilized. The work is here greatly facilitated by drilling, punching and shearing machines, which, however, somehow, detract from the indefinable charm which always hangs about a smithery pure and simple.

#### The Utica Revolution Counter.

This counter is made by the Utica Steam Gauge Company of Utica, N. Y., to be operated in one of two ways—first, by attaching by means of a connecting rod any moving part to the crank arm shown in the mechanical counter, Fig. 2; second, operating the device electrically on the well-known make and break principle. It is evident that, in the first case, the counter must be placed so as to permit of its being easily connected with some moving part of the machine to be counted; but in the second case the counter can be placed in any desired location, no matter at what distance from the machine. Thus the mechanical counter can be put on the machine and the electric counter in the office. For this purpose a battery is unnecessary wherever the Edison lighting system is in use. A plug is used to tap the lighting wires and two 16 candle-power lamps in series for resistance. Any double-point circuit breaker at the machine will make the record.

The figures of the counter proper are large, and are pure white, exhibited behind a black screen. The figures and cylinders are skeleton in form for rapid motion, and run on steel centers which are fastened in a swinging yoke for the purpose of "throwing out" the cylinders to reset the counter. The cut, Fig. 2, shows the left-hand cylinder tipped over to the left; all the others except the unit cylinder do the same. When the cylinders are all in place they are locked by the small lever shown in the foreground at the left. Any motion, either reciprocating or rotary, will operate the counter; the action is positive and it is impossible to make a false count, even at high speed, as the counter is locked at each stroke. The machine has been operated, on a test on rotary motion, at a speed of 1500 per minute.

The actual work of counting is performed by an escapement similar to that used in the ordinary clock. It is operated by a long arm of steel, of such form as to act slightly in the nature of a spring, and in case of accidentally striking the top of a tooth it will, by a torsional strain, slip into its proper place and make a true count.

Provision is made, by means of a stop motion, for taking records while the machinery is running.

In the electric counter shown in Fig. 1 the escapement is operated by an armature playing between two electro-magnets. This construction insures the positive movement of the actuating device at each closing of the electric circuit.

The proceedings of the Behring Sea Arbitration Commission continue to drag their slow length along, but the end is at last in sight. It is expected that this week or next will see the conclusion of counsel's arguments, and a final decision by the arbitrators is looked for by August 1.

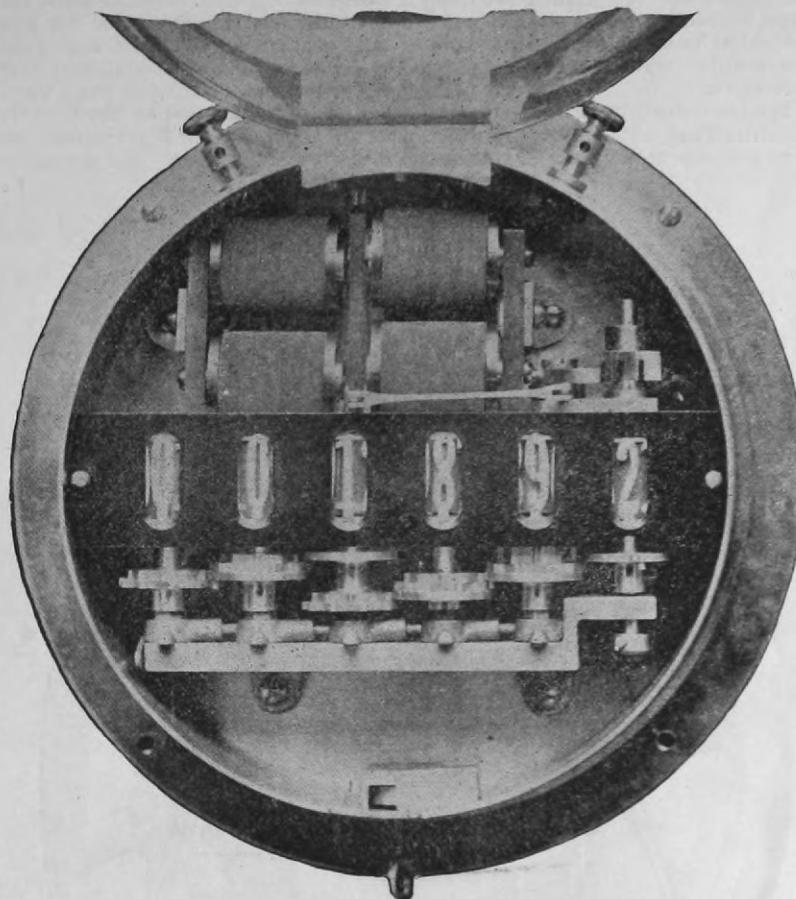


Fig. 1.—Electric Counter.

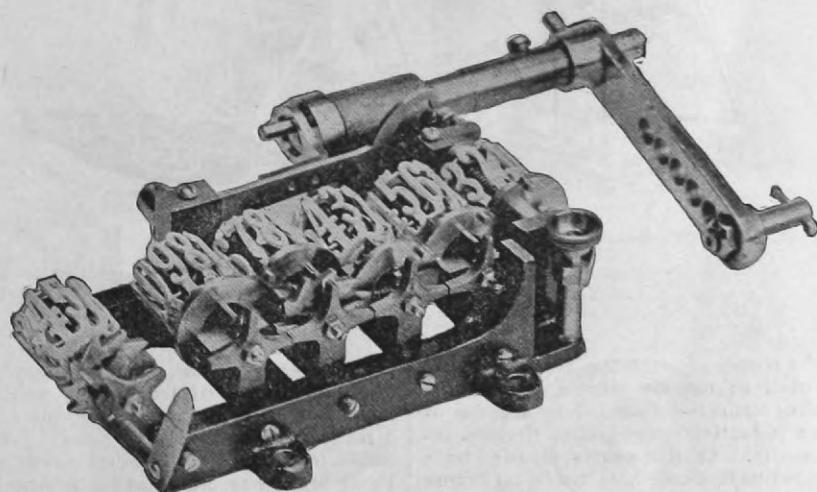


Fig. 2.—Mechanical Counter.

#### THE UTICA REVOLUTION COUNTER.

Window, door and panel grilles give, perhaps, the best opportunity for varied design of all hammered-iron work. They are made of square or round iron bars curved by forging to the proper shape and placed inside a frame, to which they are attached by screws or bands of metal. This is the groundwork, and to it are fastened by welding

and the casting is used as a pattern upon which the leaves are more readily hammered into shape.

#### Tools.

Although the tools used at the forge are few, the fitters require quite a number of appliances. Files, round and square, punches, chisels, squares and

### The Pittsburgh Gas Engine.

It is not necessary in this article to discuss the advantages and disadvantages of the several types of gas engines now on the market, or to dwell upon the theoretical questions involved, as these points have been repeatedly presented in technical papers and are comparatively well known. In designing the Pittsburgh gas engine the aim of Albert Schmid, superintendent of the Westinghouse Electric & Mfg. Company, and of Mr. Bechfeld, was to produce an engine possessing the following characteristics: Close regulation under the widest variations of load; an admission device that would admit gas in quantities exactly proportioned to the power required; an ignition device that would be absolutely positive and efficient in its action; to provide complete jacketing and thorough lubrication; and to be compact and simple in its general design and to have all parts easily accessible. It is evident that an engine having these features will be economical in the highest degree.

The engine here illustrated is made by the Fuel Gas & Mfg. Company of Pittsburgh, Pa., in sizes from  $\frac{1}{2}$  up to 200 brake horse-power. As the principles of design and operation are the same for all these engines, a brief description of a single example will embody the characteristics of the whole class. The most striking innovation is found in the use of a crank chamber to inclose the bearings and lower end of the cylinders. This chamber is filled almost up to the shaft with a mixture of oil and water, into which the crank shaft and connecting rods splash at every revolution, so as to completely deluge the bearings, piston and interior of the cylinders, thereby not only affording copious self-lubrication, but also supplying an efficient jacket to the piston. Oil for the crank chamber is introduced through the main bearings, which are supplied from the only two oil cups on the entire engine. A simple pipe connection with a city main supplies the necessary water. Another pipe, serving to carry off the overflow, is made, by means of a funnel head, to indicate the level of the lubricants in the crank chamber.

All the Pittsburgh gas engines are built with two cylinders on a single shaft, and, as usual, abnormal heating is obviated by the employment of water jackets. Each revolution made by the engine operates valves admitting the gaseous fuel alternately to the one or the other cylinder. As the period of admission is controlled by a positive action, the crank shaft receives an impulse once each revolution, no matter what the load, but the energy of that impulse is predetermined by an independent piston valve. In order that the maximum amount of energy may be developed by the explosion of the gaseous fuel, there is but one value that the relative amount of gas and air can bear to each other. This value has been determined by a prolonged series of chemical analyses, and the company now design their measuring piston valve so that it shall always admit gas and air in their correct proportion for producing the correct maximum result, but at the same time vary the total amount of mixture directly as the work of the individual piston stroke.

By reason of this nicety of adjustment of the energy developed to the momentary load, and by the constant use of fuel at its maximum efficiency, this engine is enabled to develop the maximum

amount of work for each unit of gas used. Furthermore, as the shaft receives, once every revolution, an impulse that is proportioned to its load, a smooth and regular speed is maintained.

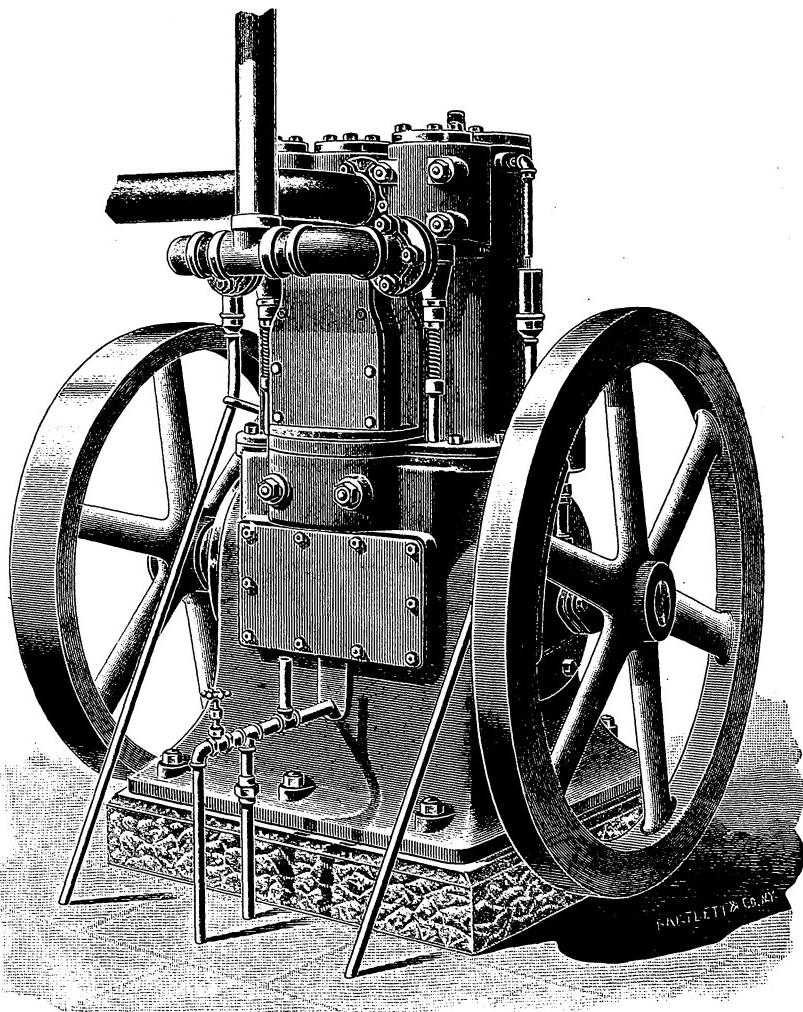
The governor regulates the speed and controls the admission of gas to the cylinders. It is mounted upon the shaft, between the cranks, and, by direct connection between the eccentric rod and valve stem, insures an accurate and positive travel to the measuring slide valve.

The igniter employed is of the electric spark type. It consists, in brief, of an arm operated by a cam. At just

which is the only work of any engine available for the buyer.

The test was made using city illuminating gas as a fuel. This is more expensive than common fuel gas, which nowadays is quite generally supplied through city mains or may be economically manufactured even on a small scale; but the company preferred to fulfill all the most exacting conditions, in order that any individual might decide for himself whether or not their engine was available for his own special conditions.

The gas meter employed was a standard one, manufactured by the Fuel Gas & Mfg. Company, and guaranteed correct within 1 per cent. The springs for



THE PITTSBURGH GAS ENGINE.

the proper moment the arm is made to break an electric circuit, and the arc thus formed—intensified by the use of an induction coil—ignites the fuel instantly. As the arm is actuated by a positive motion, there can be no failure to produce a spark and no failure in the resulting ignition of the fuel. In order that the engine may be entirely self contained, the electric current is supplied from a galvanic cell. If preferred, however, the requisite energy may be taken from a dynamo circuit.

The following is the report of a test made by competent and disinterested engineers of one of these engines, rated at 9 nominal brake horse-power, having an 11-inch stroke and pistons 6 inches in diameter. As will be noticed, contrary to the usual practice, the company rate their engines by the brake and not by the indicated horse power—*i. e.*, by the energy obtainable at the band wheel,

indicator work were carefully tested, and the results corrected for any small error. The indicators were placed directly upon the cylinder cases. For measuring the delivered horse-power a Prony brake was used, having a wheel 27 $\frac{1}{2}$  inches in diameter, and an arm 29 $\frac{1}{2}$  inches in length. The indicated horse-power was calculated in the usual way—*i. e.*, from the number of revolutions and effective pressure.

The duration of each of the three runs made, A, B and C, was two hours.

	A	B	C
Load.....	Full	$\frac{2}{3}$	0
Load on brake in pounds.	75.8	52.6	0
Revolutions per minute.	223.5	223	221
<i>Pressure in Pounds Per Square Inch in Cylinders.</i>			
Cylinder.			
Mean initial	{ I .. 159	103	27.4
	{ II .. 161	104	28
Mean terminal	{ I .. 25	18.8	8.8
	{ II .. 25.3	19	9
Mean effective	{ I .. 61	47	17
	{ II .. 61.5	47.2	17.1

*Indicated Horse-Power.*

Cylinder I.....	5.38	3.59	0.80
Cylinder II.....	5.40	3.62	0.82
Total.....	10.78	7.21	1.62
Brake horse-power.....	9.10	5.80	
Horse-power loss in friction.....	1.68	1.41	
Mechanical efficiency .....	84%	80%	

*Gas.*

Temperature, degrees, C.....	22	16	15
Pressure in inches.....	1.5	2	2
Amount in cubic feet, at 0° consumed per hour .....	165	121.8	50
Amount in cubic feet, at 0° consumed per hour per 1 horse-power.....	15.3	10.9	30.8
Amount in cubic feet, at 0° consumed per hour per B horse-power.....	13.2	21	

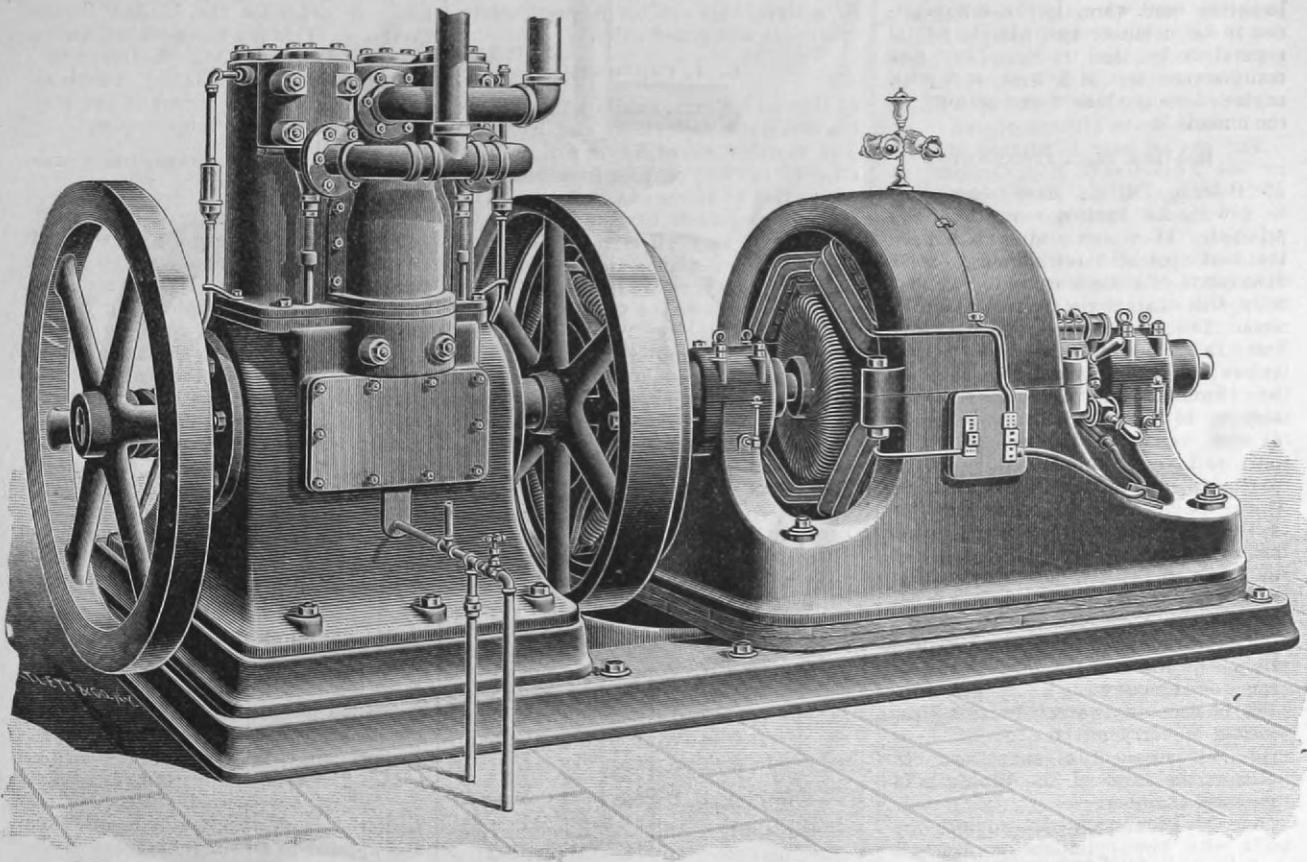
*Water Jacket.*

Pounds of water used per hour .....	1538	1210	1009
Rise in temperature, degrees, C .....	220.2	19	17.8

**Western Failures.**

The Racine Hardware Mfg. Company, one of the largest manufacturing plants at Racine Junction and in Racine, Wis., made a voluntary assignment on June 17th to August & Frank for the benefit of their creditors. Their capital stock, paid up, was \$300,000, and they employed between 300 and 400 men. The exact amount of the liabilities is not known; but a statement made by the officials a few days ago to the banks when they asked for additional loans gave their indebtedness at about \$300,000 and their assets, including plant, at from \$600,000 to \$700,000. The company did a large business, and have orders now on hand from \$75,000 to \$100,000. About

and foundry business in Wheeling, W. Va. Some time ago a deal was made for the removal of the plant from Wheeling to Harvey, Ill., to which place the concern recently removed their machinery. The company expected to float \$120,000 worth of bonds to put them in working order and furnish a working capital, but the financial stringency was too great for them to sell their bonds, and they were forced to take this step for the protection of their creditors. The assets of the concern at Harvey consist of six or eight acres of a manufacturing site, large and substantial buildings and considerable valuable machinery, while in Wheeling the concern are the owners of the foundry and machine shop property, which is said to be quite valuable. As



THE PITTSBURGH GAS ENGINE COUPLED DIRECT TO DYNAMO.

Samples of both the supply and the exhaust gases were sent to the Pittsburgh Testing Laboratory to be analyzed. From the results of the analysis reported by that firm, it was found that a cubic foot of the gas used in the test will, if completely burned, yield 434.3 B. T. units of heat. Though this is a very low value per cubic foot, it only indicates that the Pittsburgh gas is a much better illuminant than fuel, and does not in any sense favor the gas engine; on the contrary, it rather reduces the efficiency by the unavoidable heating of superfluous air.

With the conditions of the test as given, the energy received and expended per hour was divided as follows:

\$10,000 is due the workmen, but by the Wisconsin statutes all claims for labor are preferred.

Upon application of a number of stockholders John R. Brunt was appointed receiver for the Anderson (Ind.) Iron & Bolt Company on June 22. Inability to make collections and meet bills is given as the cause. Mr. Brunt has been manager of the company. The liabilities are \$34,000, with estimated assets of \$93,000.

Announcement is made that the General Engineering Company of Harvey, Ill., have been placed in the hands of a receiver. The General Engineering Company several years ago succeeded to the firm of A. J. Sweeney & Sons, for many years engaged in the machine

yet, it is not known whether the concern will put their plant at Harvey in operation or whether it will be closed down and a sale take place.

Additions to European railways in 1892 were made to the extent of 258 miles. This mileage was made up as follows: Germany, 316 miles; France, 655 miles; Great Britain and Ireland, 50 miles; Russia and Finland, 85 miles; Austria and Hungary, 655 miles; Italy, 125 miles; Spain, 175 miles; Sweden and Norway, 160 miles; Belgium, 62 miles; Switzerland, 50 miles; Holland and the Luxembourg, 11 miles; Portugal, 105 miles; Denmark, 18 miles; and Greece, 87 miles. At the close of 1892 Germany had 27,130 miles of railway in operation; France, 23,715 miles; Great Britain and Ireland, 20,435 miles; Russia and Finland, 19,420 miles; and Austria and Hungary, 17,540 miles. No other European country could boast 10,000 miles of completed railway.

Total energy received in foot pounds.....	55,200,000	40,800,000	16,750,000
Total energy expended.....			
Indicated work in foot pounds.....	21,280,000	14,360,000	3,200,000
Water jacket in foot pounds.....	23,900,000	17,800,000	1,382,000
Exhaust, radiation, &c., in foot pounds.....	10,020,000	3,749,000	12,168,000
Efficiency for 1 h. p.....	39%	35%	19%
Efficiency for B h. p.....	33%	28%	...

## World's Fair Exhibits.

### The Jacob J. Vollrath Mfg. Company

of Sheboygan, Wis., make a fine exhibit of their Vollrath enameled ware. The company have recently engaged in the manufacture of steel and sheet iron enameled ware, but their exhibits are of as high an order of excellence as though they had been making this class of goods for years. They have built a very neat pavilion for their display, the sides of which are glass cases filled with specimens of all kinds of cooking utensils as well as covered vessels, teapots, coffee pots, &c. Many of the specimens are handsomely decorated. Different colors are shown. On the roof of the pavilion they have a variety of specimens of their blue and white and Imperial cast ware, in the manufacture of which the company built up their reputation in the trade. They also manufacture maslin kettles and pots, enameled on the inside and painted on the outside.

### Belding Mfg. Company

of Belding, Mich., have done very well with the limited space they were allotted. They show all the regular styles of household refrigerators except sideboards. All sizes are in the display, from very small boxes for small families up to the largest made for large hotels and restaurants. Thirty-two of their grocery refrigerators are in use on the fair grounds in restaurants. The sample of this class shown in the exhibit is finished with plate-glass mirrors in each panel, making a very pretty finish and attracting much attention. The other goods shown are just as they come from the factory, but are so well finished that they make a fine display. In one style of their domestic refrigerators a sliding glass shelf is constructed to hold meat or butter. The object of this is to enable the shelf to be pulled out so that a piece of the contents can be cut off without permitting the interior of the refrigerator to be heated up during the process. When the shelf is pulled out, the closed back completely stops up the opening. The hardware on these refrigerators is elegantly nickel plated.

### Detroit Corkscrew Company

of Detroit, Mich., exhibit a variety of corkscrews. The Columbus power corkscrew is of the type with a base to fit on the mouth of the bottle, when the cork is drawn up through the center. Greeley's cork extractor is a grooved flat wire with the end bent over to make a short catch. It is forced down the side of the cork, then twisted round to pull the cork out. The Puddefoot power corkscrew is a pocket corkscrew with a short fulcrum riveted at the joint. After the screw has been driven into the cork, the fulcrum is dropped on the top of the bottle and the cork is then easily drawn by leverage. The Davis pocket knife, wire cutter and lever corkscrew has a serviceable knife blade, and the wire cutter is also intended for use as a fulcrum to rest on the top of the bottle, making the cork easy to pull. The Davis corkscrew is the same without the knife blade.

### C. E. Jennings & Co.,

79 Reade street, New York, exhibit in an upright glass case samples of their mechanics' tools. They are very attractively arranged in groups according to size, tacked on the back of the show-

case. A small circular saw forms the center piece. It is inclosed in a frame of reamers and other bits, extending points outward. Gouges, draw shaves, ice shaves, chisels, screw drivers, plane bits, scratch awls, extension bits and back saws make another series in the enlargement of this circle, while on the extreme ends are butchers' cleavers and saws, hand saws, straight and bevel sided chisels, gouges, &c. The bottom of the case and a shelf above it are devoted mainly to a display of augers and auger bits. This is a special feature of the exhibit, the bits being of all styles of twist, and a great variety of sizes. In some of them the twist has been extended far beyond the usual length, to show the facility with which the firm can turn out this class of fine work. Sets of bits are displayed in cases. There are also cases of chisels, containing assorted sizes. Taken collectively this exhibit is particularly creditable and noteworthy.

### G. J. Capewell

of Hartford, Conn., exhibits the Columbia combined nail puller and hammer. The samples shown cover nail pullers adapted to every purpose from domestic use to that of stores and factories. The carpet tack pullers have an exceedingly simple but very effective device, very similar in appearance to the beak of a parrot. The jaws are formed of sheet steel, the movable jaw falling into place by its own weight. While these too's are operative for pulling tacks they will also extract quite large brads. The combined hammer and nail puller is equal to every service required of a hammer about a house, being especially adapted to the use of storekeepers handling small boxes, such as druggists, grocers, &c. Mr. Capewell's latest and best puller, suitable for any nail, large or small, pulls the nails straight, doing away with the extra power and friction required to pull the nail in the old way. He is the inventor of the well-known Giant puller. The Columbia combined hammer and tack puller is put up in cards of half a dozen each, backed with carpet, and so arranged that they will either stand on a counter or can be hung on a wall, making a neat display.

### The Capewell Horse Nail Company

of Hartford, Conn., and London, England, make a beautiful display, having an upright showcase in which the nails are shown fastened to the back in pleasing patterns, the horseshoe being particularly conspicuous. The corrugated pattern of horse nail is the latest improvement brought out by this company, obviating the necessity of clinching the nail, holding the shoe firmly for ordinary use and enabling it to be easily cast by the horse if he should get his foot fast. Another feature of this nail is the corrugated head which holds a shoe firmly until it is worn out. In connection with this exhibit is shown a case of hand-made horseshoes furnished by an expert horseshoer, in which peculiar form of shoes are displayed adapted to the treatment of all sorts of diseases of horses' feet and of accidents to the feet to which horses are liable. This is especially interesting to horsemen and will prove very instructive to the great majority of them. The workmanship on these shoes is of the highest order of skill. A bar shoe, with a toe weight, was made of a simple piece of steel, without a weld.

### The Northfield Knife Company

of Northfield and Thomaston, Conn., make a display of pocket cutlery which

is one of the finest exhibits in this particular line on the grounds. They have an upright showcase with a horizontal compartment, both of which are filled with pocket knives arranged in pleasing patterns, some 600 specimens being shown. In the upper compartment the knives are grouped in two divisions, those of one side centering about a large 20-bladed tortoise-shell-handled knife, and of the other side about a 34-bladed pearl handled knife. The variety presented is almost bewildering, and would seem to be sufficiently great to cover every possible requirement of those who use pocket knives. There are hunting knives, dirks of murderous appearance, big knives for farmers and woodsmen, and dainty knives for sharpening pencils and paring finger nails, down to diminutive specimens so small as to be merely curious. Among the samples shown is a specimen of those made to order for the United States Congress. This is a three-bladed knife, pearl handled, with "U. S. Congress" etched on the large blade. American cutlers may well be proud of the very fine exhibit made by this company.

### Vienna Enamel & Stamping Company

of Porter, Ind., whose main office is at 149 Lake street, Chicago, have adopted an original method of attracting attention to their display. Having a corner space, they have carpeted the corner and left it uninclosed, running an upright showcase along the rear sides. On shelves in the case they exhibit their enameled ware in marbled, mottled, deep blue and white finish, introducing variations from these types to show the capabilities of their process. The goods shown cover table ware, decorated drinking cups, tea and coffee pots, toilet sets and cooking utensils. The lower part of the showcase is decorated with metal panels of beautiful designs, handsomely enameled.

### Buck Brothers

of Millbury, Mass., have a counter showcase filled with samples of chisels. Some 300 specimens are shown, covering all kinds of chisels—firmer, socket, paring, gouge, tang firmer, tang paring, socket firmer, socket paring, &c. The display of bevel-sided chisels is particularly good, the bevels being deep and applied to all sizes of these tools. The patterns of turning chisels are numerous, covering every size required in this line. Engravers' chisels are shown in great variety. There are also screw drivers, awls, cold chisels, nail sets, reamers and cut plane irons in the display, which is more than ordinarily interesting.

### Charles Buck,

Millbury, Mass., has a display of chisels in an upright glass case, in which the samples are shown arranged according to size and style, embracing 16 different kinds. The special feature of this exhibit is the display of bevel-sided chisels. These are shown in firmer chisels, socket chisels, paring and socket paring chisels, all handled with an improved handle of apple tree wood made in cylindrical form instead of the usual oval. The other styles of chisels shown are the tang firmer, tang parer, socket firmer, tang firmer gouge, tang paring gouge, socket firmer gouge and socket paring gouge. These gouges are beveled according to their requirements inside and out; also turning chisels and gouges, reamers, screw driver bits, punches, awls, nail sets and cut plane irons.

**Universal Sad Iron Company**

of Milwaukee, Wis., have a large oak showcase, with glass sides, in which they show a large number of their sad irons arranged in pyramidal form. These sad irons are self-heating, being really charcoal stoves. They are made in several sizes, for family use or for dressmakers or tailors.

**Stone Mfg. Company**

of Columbus, Ohio, exhibit the Stone clothes wringer. They have erected for this purpose a series of shelves in pyramidal form, made of small channel iron, supported by a frame work of bar iron and angles. The channels for the shelves are placed just far enough apart to receive the feet of the wringers. The structure is thus light in appearance and very tasteful. These wringers are made with all-metal frames, galvanized. Interspersed among them are a number of toy wringers, exact reproductions in miniature of the commercial sizes. T. W. Stone, inventor of this wringer, is in charge of the exhibit. He has just brought out a new wringer named the Progress, one of which is on exhibition. This wringer is exceedingly simple, having no bolts, screws, threads or nuts. It adjusts for any thickness by means of a horseshoe spring, the ends of which are connected with the rolls. The metal table in the front of the rolls is pivoted on the inside clamp, so that when it is raised the rolls are released and the wringer can be moved from the tub. This is an entirely new feature in a wringer, the patent having been granted without any reference to any previous patent. It will be regularly manufactured by this company.

**Hurd Refrigerator Company**

of Duluth, Minn., make an unusually fine display of their refrigerators. They have finished them in carefully selected woods, which have been given a piano polish, while the interiors are lined with sheet copper tinned, instead of the usual galvanized iron. A fine sideboard in curled maple, natural finish, attracts particular attention. It has a high double closet with plate-glass doors, under which is a plate-glass mirror the full width of the refrigerator. The hardware is of solid bronze in a very pretty pattern. A tank for drinking water occupies the space in the center between the two compartments of the refrigerator. Another very pretty sideboard shown is in red oak. There are also grocers' refrigerators, various styles of domestic refrigerators and narrow apartment house refrigerators.

**J. S. Thompson**

of Erie, Pa., exhibits two of his North Pole refrigerators. The Crystal pattern of this refrigerator is lined with glass, making a very clean receptacle for the storage of food, and also free from any odor connected with a wood lining.

**Alaska Refrigerator Company**

of Muskegon, Mich., have a two-story pavilion, built of oak. This is an extremely handsome piece of work and attracts much attention. The posts are beautifully carved, with carved capitals. The roof of the second story is in oak panels, while the ceiling of the first floor is mirrored in panels. A neat stairway gives access to the second story. Here is the desk of J. Chapin, in charge of the exhibit. There are also on this floor a sideboard and some domestic refrigerators, one of which is kept in use to show its system of refrigeration. Below are a number of the

company's goods taken from their regular line, finished just as they go to the trade. The display comprises sideboards, grocers' and florists' refrigerators, a beer cooler and a line of domestic goods, all built on the well-known Alaska system of refrigeration.

**Wisconsin Refrigerator Company**

of Eau Claire, Wis., have a very good display of their Peerless refrigerators. The gem of this collection is a full mahogany sideboard refrigerator, made to order for a customer. It is beautifully carved and paneled, has a large plate-glass mirror in the top and is supplied with compartments in addition to the food and ice compartments. This stands on an elevated platform, approached by a short flight of steps laid in parquetry. The other refrigerators shown are just as taken from stock. They are well made, however, and finely finished in every detail. The point specially made in the construction of these refrigerators is to secure easy access to all the flues so that they can be readily cleaned. The sides of the flues are lined with wood, on the theory that the moisture condensing on metallic surfaces would obstruct the free passage of air.

**A Prehistoric Blast Furnace.**

Prof. Flinders Petrie, the distinguished explorer of biblical lands, when excavating and investigating in Southern Palestine a few years ago convinced himself that in a remarkable mound called Tel El-Hesy would be found the remains of what was one of the strongest places in that country down to the invasions of Sennacherib and Nebuchadnezzar. The explorations since carried out on the spot were announced at a recent meeting of the Palestine Exploration Fund in London as having fully verified this forecast. The mound is found to be composed of no fewer than eight successive towns formed on the ruins of one another, the uppermost dating about 500 B.C. and the lowest, or earliest going back to 1500 B.C., the time of the great Egyptian conquests in Palestine. Amid all the evidence discovered by F. J. Bliss of the American College at Beirut, Syria, who has had charge of the excavations, of the civilization of that remote age—wine presses, treacle presses, alkali burnings and innumerable other things—by far the most curious is the disclosure of an iron blast furnace, so arranged as to give strong evidence of being intended to heat in its descent a blast of outside air forced through passages before entering the chamber at the level where tuyeres are usually found. "If my theory be correct," says Mr. Bliss, "we find 1400 years before Christ the use of the hot-air blast instead of cold air, which is called a modern improvement in iron manufacture due to Neilson, and patented in 1828."

The following changes in the rates of import duty levied on the undermentioned articles have been introduced by the Newfoundland Government: Iron and steel buildings (not including their wood work) iron and steel beams, girders, joists, pillars, columns, doors, sashes, shutters, cornices, architraves, channels, gutters, angles, structural shapes, shingles of iron, steel or composition; sewing machines, knitting machines, and parts of same, are now all assessed at 10 per cent. ad valorem.

**Bathing and Washing Facilities in a Brooklyn Factory.**

The past few years have witnessed amazing developments in almost every branch of manufacture in the United States. Success and progress have been marked by the erection and equipment of costly factory buildings and handsome offices. The newest inventions in labor-saving machinery to improve the quality and lessen the cost of production have been everywhere introduced into their establishments by the successful manufacturers of this country. Increased attention, too, has been paid to the proper heating, lighting, and ventilation of workshops and factories; employers recognizing that improved conditions in these matters, while ministering to the health and comfort of their work-people, tend also to their own advantage in inducing better work and more of it.

This is all matter for congratulation, and very satisfactory so far as it goes. But there seems to be something yet to be learned in respect to the provision of better washing and other sanitary facilities, for, as a general rule, such provision falls far short of what it might be. Baths are rarely found in American factories, nor any facilities for washing out soiled clothes. Yet the advantages that might be gained, both by employers and employed, in the provision of such comforts are worth consideration. While improving the health and comfort of the men, the refreshment of bathing and enjoyment of clean clothes would undoubtedly give them a greater capacity and energy for their work; body and mind alike would be refreshed, and the refreshment would react upon their laboring qualities.

In Germany, as we understand, a system of baths and wash places has been adopted with much success in several factories, similar to that in use in the schools and public institutions of that country—namely, the shower or rain bath system. Results have, it is said, shown a marked improvement in the general health and working qualities of those using them. The special recommendations of this system are that it is more economical of space; and that men can get a thorough wash-down in a short time—from three to five minutes—with great economy in the amount of water used. It can also be introduced at a comparatively small cost; and, in large industrial establishments, would be found to be of great value to and appreciated by the workers, especially those in cities, where facilities for maintaining personal cleanliness at home or elsewhere are often very small.

This matter has, we understand, been in the minds of several employers of labor throughout the country, but various reasons have militated against its practical adoption. Among these employers is J. H. Williams, head of the firm of J. H. Williams & Co., the well-known makers of drop forgings of Brooklyn, N. Y. Mr. Williams, after long consideration and investigation, convinced himself of the material advantages which would result from supplying his men with bathing facilities, and accordingly decided to adopt the shower-bath plan as the best method for overcoming the objections as to cost, space, loss of time, &c., which in this connection were urged with reason against the bathtub system. Taking as his model the People's Baths of New York City, where the luxury of a shower bath, with towel and soap, is provided for the small sum of five cents, he built

a similar bathhouse in connection with his works, which is the first on this principle yet introduced into any American factory.

Space for the new bathing room was found at one end of the lofty forge-shop in the works of the firm which are located at 9-15 Richards street, Brooklyn. A new story was "hung on" to the roof, forming a room, as shown in the accompanying plan, Fig. 1, 50 feet in length and with an average width of 19 feet. On one side of the new room are placed 12 shower baths, similar to that illus-

bath in rapid succession; a great feature where all wish to bathe at the same time, as would be the case in large factories. The baths would probably be most in request at the close of the day's work, when men do not care to waste their time in prolonged ablutions, and yet can afford sufficient time to get a thorough cleansing by a shower bath on this principle. The water each would use, too, would be but about one-seventh of the amount required for a tub. No attendant is necessary to fill tubs, &c., and no cleaning up is entailed af-

and order, and is altogether a step in the right direction.

In addition to the shower baths, the washroom is provided, as shown on plan and in the general view of the room, Fig. 3, with three large cast-iron troughs, in which those men can wash themselves who do not require a regular bath. These are each fitted with a row of half a dozen sprinklers, so that the men can get a *douche* for their heads. The troughs are filled with warm water just before the dinner and knocking-off hours, by an attendant, who is able to

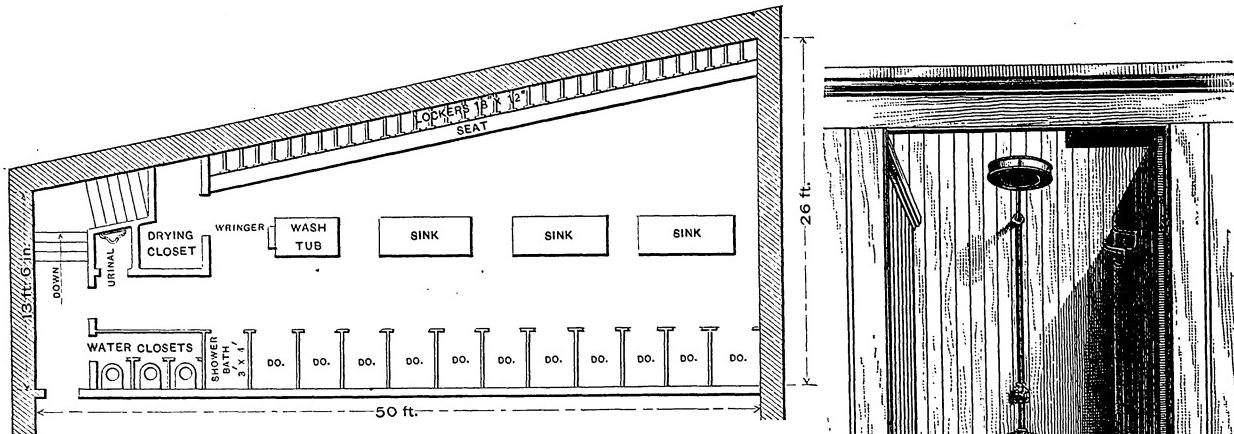


Fig. 1.—Plan View of Washhouse.

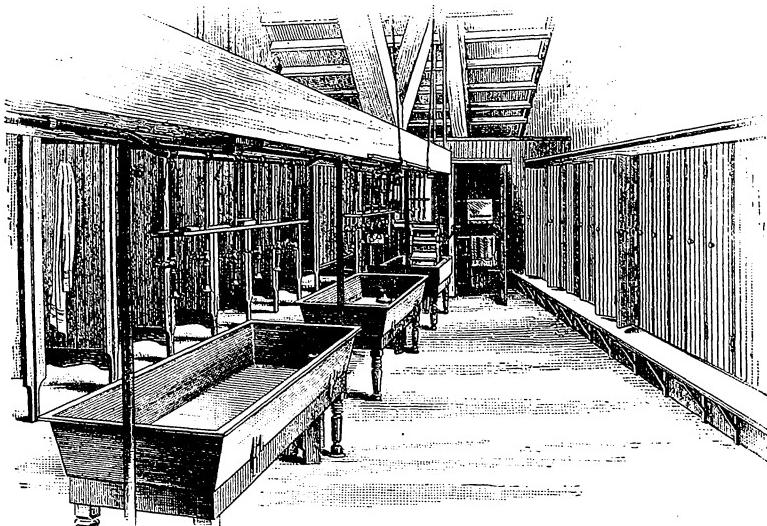


Fig. 3 — General View of Washroom.

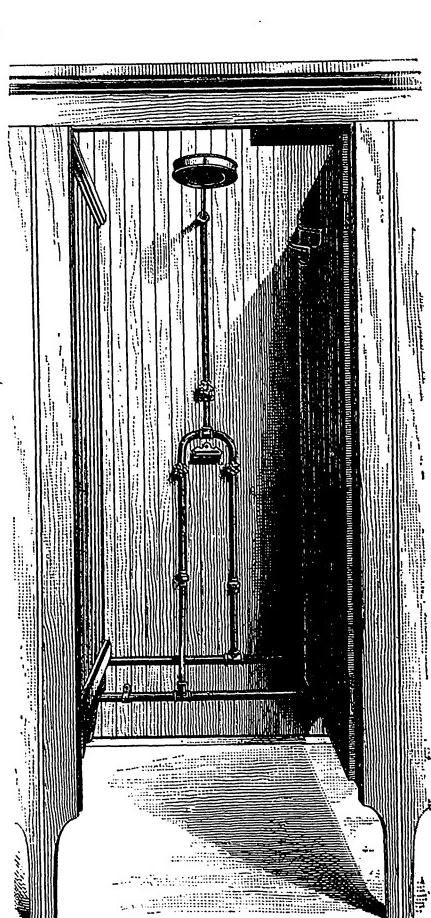


Fig. 2.—Shower Bath Compartment, Showing Piping.

#### BATHING AND WASHING FACILITIES IN J. H. WILLIAMS & CO.'S FACTORY, BROOKLYN.

tated in Fig. 2, consisting of small cubicles with ample room for a man to stand and move in. In each is fixed a large overhead spray connected to pipes conveying hot and cold water. The hot water pipe is connected with the heating system in use all over the factory, and the cold with the street main. These can be regulated so as to obtain any temperature desired by the bather. A rack with soap is fixed on the wall; and the water is conveyed off by a trough at the side of the room, the asphalt floor having a double incline, which insures the ready flow of water. These bathing compartments occupy but a small floor space, being only 3 feet by 4 feet in dimensions.

It is calculated that the men will take but from three to five minutes in getting a wash-down, so that a number can

terward, as the water runs off immediately, the cleansing being automatic.

There are other advantages in the shower-bath system also, in that no soiled water touches the body, consequently the cleansing is more thorough and there is no danger, as in the bathtub, of communicating disease. The baths are ready, too, at all seasons and times, and there is little apparatus to get out of order. It is believed that in hot weather the men will often utilize a portion of their dinner time in getting a "refresher" in the bathroom, and will go back invigorated thereby to their afternoon's work.

The system appears to be one that would recommend itself to employers solicitous for the comfort and health of their men. It is also calculated to educate the men in habits of cleanliness

keep the whole place clean with but very little trouble.

There is also a further laudable innovation connected with this institution. A matter which has long troubled workingmen is the disposal of their working clothes. These become soaked with perspiration in a place like a forge shop, and when taken off at the day's end must be either carried home to be washed, or hung up in the shop to dry and put on next day in a sour, unpleasant state. Usually, the latter alternative is resorted to. In this washhouse a large soapstone sink is provided, where the men can in a few minutes rinse out their soiled garments and pass them through a wringer attached to the side of the trough. A drying closet is placed at the corner of the room, where, by means of hot-water pipes, the clothes are thor-

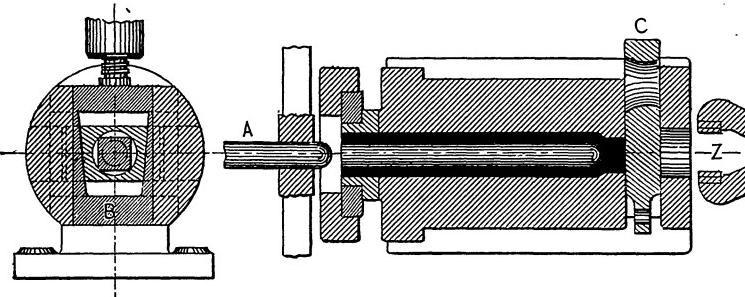
oughly dried; and they can thus be put on next morning clean and fresh—a great boon to men who work in the heat of a forge shop, and are constantly in a condition of sweat, which soaks the clothes in which they work.

Opposite the bathing compartments is a double line of lockers, 80 in all, in which the men can stow their clothes. These lockers are high enough for hanging garments, and are provided with hooks and a shelf for small articles. At the foot of the lockers runs a shelf on which the men can sit down. The view, Fig. 3, shows only one row of these lockers. Another is now being erected above them. The water-closet facilities

society of Iron Masters at Duesseldorf. The point aimed at was to produce in one heat a tube as long as possible, whose interior surface was smooth and sound. The principle underlying the method is to start with a square rod, heat it and introduce it as rapidly as possible into the round matrix, so that the four edges act as guides, the main point being to center quickly and to carry out the work of the press as rapidly as possible. As soon as the heated bar is introduced it is centered at the front end with a wedge, and is held there more firmly than at any other point. The mandrel A in the accompanying figure is driven exactly in a

the tongs Z. Then begins the second operation, in which the article is drawn for the first time. With larger sizes a second and third drawing can be carried out with the initial heat, so that it is possible to produce a relatively long tube in one heat.

Mr. Ehrhardt first put up a trial press with a cylinder 19.70 inches in diameter and 43.34 inches stroke, with an equipment of pumps and accumulators for 90 atmospheres. His intention was to make tubes up to 2 36 inches interior diameter, but he found that with a pressure of about 180 tons he could produce tubes up to 7.88 inches diameter in the clear. Besides this he is working a press, driven by pulley, in which he can make smaller tubes from 0.24 to 1.18 inches by interposing quickly a fly wheel running at high speed. Hydraulic presses cannot be run above a certain speed on account of the blows in the pipes, and yet a certain speed is absolutely necessary so that the mandrels do not become too hot, which is one of the ticklish points in the method of manufacture. Mr. Ehrhardt claims that he is even now in a position to produce seamless tubes of high quality and finish cheaper than by any other method. One of the difficulties which he has been struggling against was to obtain uniform thickness of the tubes. This has not been entirely overcome, but the achievements thus far give rise to the expectation that this irregularity will be met.



EHRHARDT PROCESS OF MAKING SEAMLESS TUBING.

attached to the bathroom are exceptionally good and would do credit to any well-appointed house, being of the latest type, with toilet paper and washing facilities provided.

The bathroom is high and light, being provided with large skylights, over which shades are drawn in sunny weather. Thorough ventilation is secured by side lights which can be opened to their full extent, keeping the room cool at all times. Two large mirrors are fixed to the walls.

Mr. Williams looks at the matter primarily from a business point of view, believing that the bathing and washing facilities he gives his men will prove a good investment in the increased returns of work done. At the same time he regards it as a still wider question, affecting the community at large. His opinion on the subject is briefly put, in his own words, thus: "As it is acknowledged that habitual bathing prevents disease, and promotes health and morality, baths for working people affect all classes of society. Employers are, therefore, under moral obligations to supply such facilities, and health, decency and humanity demand it, because few opportunities for personal cleanliness are afforded to any but the privileged classes."

The arrangements are open to inspection at any time, and Mr. Williams has intimated his willingness to give any information desired in regard to the same, to those wishing to examine into his methods.

#### The Ehrhardt Process of Making Seamless Tubing.

Both in this country and abroad efforts are being made to produce cheaply seamless steel tubing, for which there is a growing demand in many lines of manufacture. An interesting method has been developed by H. Ehrhardt of Duesseldorf, who is connected with a well-known German machinery firm. This method he has described briefly at the last meeting of the German So-

central position, and when it has once entered is guided by itself. The action is very much like that which is observed in boring gun barrels, in which the drill continues in the correct position after the start has been accurately made. It is only when there are faulty spots in the material that the mandrel swerves from the right direction. The material is forced outward, filling the four segments and at the same time flowing in

#### The Horton Drill Chuck.

This chuck, as will be seen by Fig. 1, which shows the parts detached, is composed of but four pieces, the body being formed of a single piece of metal. It is made entirely of steel, and the jaws are hardened. The latter are so formed

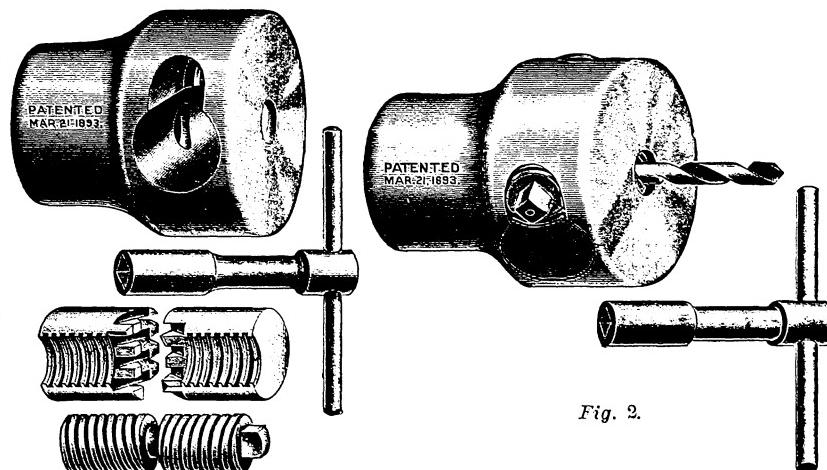


Fig. 1.

Fig. 2.

#### THE HORTON DRILL CHUCK.

the direction of the movement of the mandrel. Directly behind the contraction of the matrix, as shown in the drawing, a slide, C, is kept in position during the first part of the operation. When the mandrel has penetrated deep enough it is withdrawn a little by hydraulic apparatus, and thus the pressure upon the slide is removed. The latter is now displaced in such a manner that the opening in the slide C is brought into line. Then the bar is thrust through the opening and is seized by

that the teeth on bite come opposite each other, so there is no danger of breaking or crimping the drill by the grip of the jaws. The right and left hand screw which drives the jaws is deep set into the latter, so that more of an end thrust is obtained and consequently a stronger grip. The jaws are cylindrical and, the power of the screw being applied more direct, there is no binding or canting of the jaw when taking a short bite, as is the case with many two-jaw chucks made with the

common angular jaw. This chuck is made by the E. Horton & Son Company of Windsor Locks, Conn.

## THE WEEK.

The British Isles are suffering from a fodder famine, caused by the long drought. Hay is cabled from London as scarce at \$40 a ton. The agricultural distress caused by lack of rain is widespread throughout Europe.

A military road, connecting the cities of Baltimore and Washington, is projected, to be used for the movements of troops in case of interruption to railway travel by riots, &c. The expense will be borne by the Government and the State of Maryland.

Forest fires in the Mesaba range have caused serious destruction of property in the mining towns and camps. Loss to the extent of \$1,500,000 is spoken of.

The aspect of affairs in Australia appears, by last advices, to be brightening. It is thought the crisis has been reached and passed, and that any changes will now be for the better. The announcement that the Bank of England had decided to discount bills of Australian banks which have been strong enough to hold their own has caused a returning feeling of confidence. The London *Financial News* says, in regard to the situation: "Notwithstanding all that has happened in Australia—overspeculation, bad legislation, government extravagance and corruption, and everything else—the Australian colonies contain vast resources and are fully able to pay their way."

A recent statement issued by the Japanese Customs Bureau shows that the foreign trade of Japan is increasing more rapidly with the United States than it is with England, France or Germany. The increased exports to this country are mainly under the head of Japanese teas and silks. Direct imports from the United States in 1892 amounted to only \$6,000,000, but this is a new and growing trade.

Official statistics show the export trade of New Zealand to be increasing at a very satisfactory rate. The principal product of the colony—wool—was exported to the value of \$20,703,874 last year; frozen meat, a new and growing industry, shows \$4,960,170 worth sent out of the islands in 1892. Gold exports reached nearly \$5,000,000 in the same period. The other staple products, namely, butter, tallow, Kauri gum, wheat and oats, all show an increase; while flax exports fell off \$335,000, as compared with 1891.

The Westinghouse Electric Company's charges against certain officials of the General Electric Company, and others, have been sustained by the Grand Jury at Pittsburgh, who, it is announced, found a true bill against the defendants. It is alleged that the persons accused conspired to secure blue prints and tracings, showing the design and construction of certain machinery owned by the Westinghouse Electric Company.

San Francisco papers say that the final trial trip of the United States coast-defense ship "Monterey" has developed the fact that she is a good seaboat, but a failure as a fighter. Her big guns wrecked their hydraulic machinery when fired but once, and if they were loosed for action in a sea they would

tear the vessel to pieces. The fault is said to lie in the designs, and not with the builders, who carried out their contract faithfully.

The aggregate value of the iron, steel, foundry and machine shop products of Paterson, N. J., last year was a little over \$6,000,000, or nearly three times as great as that of the silk and textile industries for which the city is principally famous in popular estimation.

Two large screw passenger steamers for the Old Dominion Line are to be laid down at once at Roach's shipyard, Chester, Pa. They will be similar in construction to those previously built; the dimensions being 322 feet length over all; 40 feet beam, and 34 $\frac{1}{2}$  feet depth; and the cost about \$350,000 each.

The *Nautical Magazine* says that owners of steamers built of mild steel are beginning to find out that when subjected to heat and the action of acid it deteriorates much more rapidly than iron. In some cases, it is reported, the inner plating of the double bottom in the range of the engine room has corroded through in a very short time.

An exact measurement has been taken of the big gas well at Findlay, Ohio. The gauges showed that the well was producing 18,380,000 cubic feet of gas per day.

At a meeting of the United States Wheat Millers' League recently held at Toledo, Ohio, letters were read from American consuls in Europe and the West Indies offering their services in aiding the extension of foreign markets for American flour.

The probability is mentioned that some of the hop growers of New York State may introduce the cultivation of hops into North Carolina, portions of which State are said to be peculiarly favorable to the cultivation of the plant.

Over 1,000,000 acres of land for coffee cultivation have been sold in Mexico during the past six months, many Americans being among the purchasers. European syndicates are reported to have acquired extensive coffee lands in the States of Vera Cruz and Oaxaca.

In an article on "Southern Progress and Prospects," J. S. Jeans, secretary of the British Iron Trade Association, says it will not excite any great surprise if in the not far distant future coal from the Southern States should be shipped to ports now supplied by England, and even to England herself.

Evidence of the depressed condition of shipping business is given in the returns of transit revenues collected by the Suez Canal Company for the first four months of this year. The total receipts amounted to \$4,685,966, as against \$5,364,730 received in the corresponding period of 1892.

The ship channel at Mobile, Ala., from the city wharves to the lower bay is to be deepened to 23 feet to allow vessels of 20-feet draft to load at the wharves. A project is also on foot for the construction of the Mobile, Jackson & Kansas City Railroad, which would be a valuable feeder to the port.

Southern farmers to-day are not depending solely on their cotton crops for a living. In the majority of States most agriculturists are raising diversified crops, and this practice is becoming more general every year. Cotton raising in Georgia and the Carolinas

will, it is said, soon hold second place, as to value, among the agricultural products of those States, because of the increase in production of cereals, fruit and vegetables.

The beet sugar industry of this country is growing to be an important one. Last year's production furnished sufficient sugar for the average supply of half a million of the population. Great endeavors are to be made to extend and consolidate the enterprise.

The rumor to the effect that Secretary Carlisle purposed removing the United States mint from Philadelphia has been emphatically denied. The Quakers are at present agitated over the choice of a site for the new building in their city.

Advices from the West report the likelihood of short supplies of cattle and hogs for some time to come. The long and cold spring experienced in that section has reduced the number of young rising pigs, and litters are said to have been unusually small. Stocks of provisions on hand are, however, large; and as the generally depressed state of trade in Europe will tend to check exportation, there is no expectation of any present rise in prices.

The yield of the sugar orchards of Maine, New Hampshire and Vermont is about 70 per cent. greater than that of last year.

The *American Shipbuilder* states that the Harlan & Hollingsworth Company of Wilmington, Del., have taken the initial step among American shipbuilders in preparing for free-trade legislation by the next Congress, by asking importers of English steel ship plates, angles and beams to quote them the lowest obtainable price for these materials laid down at their works or delivered in New York or Philadelphia.

The excellence of our fruit-carrying service by rail excites the admiration of foreign visitors to the United States.

Sailors and others interested in shipping are to meet in London at an International Maritime Congress next month. Thirteen nations will, it is said, be represented.

The German Society of Engineers has issued a circular soliciting subscriptions for a proposed memorial to the late Werner von Siemens.

Nearly 9000 women are employed underground in the mines of India.

A good average harvest is in prospect in Canada, especially in the northwest districts. The hay and clover crops being especially bountiful, agriculturists will have plenty of such produce to supply the demand from Great Britain which will ensue on the total failure of the grass crop in that country.

It is stated on French authority that the Panama Canal works will be resumed at the end of the current year, and that for this purpose \$10,000,000 have already been raised. The gulls are not all dead yet.

The railway and tramway lines in Teheran, Persia, and its environs, lately owned by a Belgian company, have passed into the hands of the Russians, who are extending them considerably.

The latest project in ship canals is one to connect the city of Brussels with the sea. The Belgian Government has decided to contribute a round sum toward the work. It is also willing to take over shares of the company to the extent of \$1,200,000 and to guarantee the obligations of the concern.

# The Iron Age

New York, Thursday, June 29, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - EDITOR.  
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS, - HARDWARE EDITOR.  
JOHN S. KING, - - BUSINESS MANAGER.

## The World's Fair Congresses

The conception of a series of conventions of leaders of thought and action in Chicago during the World's Fair was a grand one. The preparations for conducting these assemblages have been well made. The scheme in all its aspects has been magnificently managed, and the arrangement of the details is beyond criticism. The congresses thus far held have enlisted the active co-operation of famous men and women of many nations. The papers read and the addresses made have been worthy of the times, and fully represent the most advanced stage of modern thought. But the question arises, now that several such congresses have been held, whether any great benefit has been accomplished. Has any special result, in the least degree tangible, flowed from any one of these meetings, producing a visible effect in directing the current of public opinion or molding the popular mind on the subjects which have been discussed? The congresses have been successful in so far as merely bringing together, in international assemblages, people of eminence, but the projectors of the great scheme, undoubtedly, expected much more than that. They cannot be accused of merely contemplating these gatherings in the light of World's Fair attractions to help bring more people to Chicago, and thus swell the revenues of the exposition. It would be cruelly unkind to attribute a motive so belittling to the men who have shown themselves capable of grasping the essentials of such a vast incursion into the realms of scientific progress, philosophic speculations and practical affairs.

With few exceptions these congresses have not proved popular with the masses. The attendance at the conventions has thus far been disappointingly light, except where the personality of some individual has in itself attracted crowds inspired largely by curiosity to see and hear a famous person. During the past week a congress of bankers and financiers was held. Yet, notwithstanding the deep interest necessarily felt in financial questions at this juncture, there were sessions at which the attendance was confined almost entirely to those who had papers to read or expected to participate in the discussions. It sometimes happened that the author of a paper, on which had been expended a great deal of time and study, was so disappointed by the slender audiences

assembled that he would not take the trouble to read it. The same experience befell the congress of railroad specialists. The importance of the subjects discussed would not attract good audiences. The visitors to the exposition, who were expected to crowd to the congresses and thus make up an international audience, evidently preferred to confine their attention to the greater attractions to be seen on the grounds. The claim may be made that the daily press will supply the medium through which these congresses will influence the public, inasmuch as it has been expected that the papers and discussions will be very fully reported. But here again disappointment will be experienced. The mass of such literature daily provided is so formidable that only abstracts of papers can be given. It is noticeable that these published reports reproduce historical statements made and opinions expressed, but omit arguments and chains of reasoning which might be of benefit in directing public thought. Nor do all the great dailies devote equal space to these reports. Some give very meager details, preferring to supply their readers with more exciting literature.

It is possible that later in the exposition season more popular interest may be taken in the congresses which are yet to follow. The great attendance from distant sections of the country and from abroad is still to come. Among the throngs then visiting Chicago there may be more people keenly susceptible to the educational influences provided for them by this branch of the exposition management. But the impression nevertheless prevails that too much has been attempted in this direction, and that more interest would have been taken if there had been only an occasional gathering of the kind instead of a continuous programme of conventions.

Particulars of the sinking of the British battle ship "Victoria" by the "Camperdown" last Thursday afternoon are at present too meager to permit of any judgment being formed of the exact cause of the accident, or of forming any conclusions regarding the designing and handling of future war vessels. It will probably be necessary to wait for the official inquiry. In view of the fact that the United States is now constructing three vessels of the class to which both the "Victoria" and "Camperdown" belong, and is also building a ram ("Katahdin") intended to perform exactly the work so unfortunately accomplished by the "Camperdown," the finding of the court-martial will be awaited with unusual interest. This inquiry will undoubtedly make clear the cause of the disaster, the condition of the "Victoria" at the time of the accident and the nature of the injury inflicted upon her, and will show the extent of the damage done to the ram of the "Camperdown," and whether her hull or machinery was injured.

## Solvent Bankrupts.

The revolution of the wheel of time has again brought into distressful operation the law of the "survival of the fittest." There are variations, however, in the present application of this law which were not manifest to any considerable extent in previous periods of financial disturbance, and the term "solvency" has taken a new meaning. Heretofore an establishment has been considered solvent when its assets have exceeded its liabilities without regard to the immediate availability of the assets. Now, however, the lack of ready money, or the closing of an accustomed channel through which assets have been converted into cash, may force to the wall a great manufacturing or commercial enterprise with assets several times larger than its liabilities. Solvency to-day is the possession of the actual cash necessary to run a business; insolvency is the lack of such cash, without regard to the value of assets not cash. Establishments endowed with every qualification for a successful business career are for this reason being forced into liquidation along with the usual crowd of concerns that have been dragging out a miserable existence for years, and needed only a little unfavorable financial weather to carry them off. The situation calls for unusual forbearance on the part of creditors, to avoid the embarrassment of reputable establishments whose management can easily pull through the storm if not too sharply pressed.

## The Ferris Wheel.

Of all the engineering novelties projected in connection with the World's Fair, the Ferris wheel is the only one that has been carried to completion. The great success of the Eiffel tower at Paris, both mechanically and commercially, stimulated American inventors and engineers to attempt something equally noteworthy at Chicago. Many of these schemes have been described in our columns. One of them was the Jenison tent, with a center pole 1492 feet high and a steel and glass canopy large enough to take in the entire World's Fair exhibits. Another was the Morrison tower, in many respects resembling the Eiffel tower. A third was the Johnstone tower, 560 feet high, with an electric railroad winding about it spirally from the bottom to the top. All sorts of fantastic schemes were also exploited in the newspapers, but these were the only ones considered seriously by practical people until the Pittsburgh engineer, G. W. G. Ferris, conceived the idea of an enormous revolving wheel, with a large number of cars suspended on its periphery. It was one of the last schemes to be brought out, but it proved sufficiently practical to attract capitalists, and it was carried through.

The principle of the wheel is not a novelty, being merely the familiar re-

volving wheel of the summer resorts on a colossal scale. The plan upon which it is built is, however, a novelty in constructive engineering, and the daring builder is worthy of as high praise as Eiffel, who also merely advanced further than any of his predecessors in the building of towers. The construction of a great circular frame work of steel, 250 feet in diameter, so thoroughly braced as to resist any possible wind pressure, and so well balanced as to be moved easily on its axis, was a task calling for the highest mechanical ability. Further than this was the financing of the scheme, probably more difficult to accomplish than the details of construction. Mr. Ferris has won fame in both respects. The rapidity with which the wheel was built is another triumph of his genius. Not a pound of the steel for its construction had been ordered in January last, and the foundations were not begun until well toward spring. The middle of June sees the whole work completed and in regular operation earning a revenue.

The Ferris wheel will undoubtedly be the special feature of the fair that will be vividly remembered by the millions of visitors. Even those who are too timid to venture to take a ride in one of its cars will be interested in its curious appearance and will visit its site to take a closer inspection of the greatest single piece of mechanism ever put in motion. It is a superb work and deserves to retain its place long after the memory of the exposition of 1893 has faded.

#### Estimating Cost of Special Machines.

A machine tool manufacturer whose product is known in every civilized country said recently that he had about decided that it did not pay to undertake to build a machine embodying new ideas. Concerns having the requisite facilities are frequently requested to estimate on some large machine of special design, intended for a particular service. The machine is unlike anything in the market and the applicant desires to know, in advance, what it will cost. Long experience had proved to the satisfaction of the builder referred to that it was impossible to estimate the cost of that particular machine and be just to himself and his customer. There were always difficulties which could not be foreseen and provided for, and which appeared during the entire progress of the work.

Trouble begins in the drafting room. It is very seldom that the drawings presented are so complete and accurate as to admit of their being sent directly to the shop. In the vast majority of cases the prospective builder is expected to provide such drawings as he may need, and in some instances he is required to furnish a complete set. To tell in advance how much labor this may require is out of the question; it is only possible to form a rough esti-

mate and charge accordingly. That this is a by no means insignificant factor of the problem may be judged by the fact that in some cases the bill for drafting amounts to more than 10 per cent. of the total cost of the machine. Sometimes the builder is only furnished a rough sketch of the principal features of the machine; he is expected to supply all the missing material and, if necessary, to design such parts as proved to be beyond the ability of the purchaser. For this work he receives no pay.

When the drawings are presented in a fairly complete shape, so as to convey a clear idea of the design, there is comparatively little difficulty in forming an estimate of the cost of the patterns needed. In addition, there is very little danger of loss by reason of inaccuracy in this department. The same cannot be considered as holding good in the foundry, especially if some of the patterns are intricate and difficult to mold. The loss here may be considerable, and even the exercise of the utmost care will not insure perfect castings every time. In this, as in other work, the risk is greater if the pattern is radically different from the ordinary run of work done by the molders. For his own protection the builder is compelled to recognize this and provide for it in his estimate, but he is at a loss to know exactly what to charge for what we may term contingencies.

In the machine shop there is less difficulty, and if the other departments could be calculated with the same degree of confidence the problem would be simpler of solution. But it may be that the machine under consideration will require the use of a tool not in the shop. Should this tool not be needed regularly, the work must be done elsewhere, and the cost and profit of the outside builder must be taken into account.

Another phase of the question is this: Three manufacturers are requested to present bids for building an expensive machine of new design; they spend considerable time and perhaps some money in making their estimates. We will suppose this expenditure to be the same in each case. One man gets the contract—the others suffer loss. Should the two who failed to get the work be compensated for their trouble? We are well aware that this point has been freely discussed, but we do not know that any attempt has been made to obtain pay for this work which is practically thrown away.

The hard times are having an effect on the formation of new industrial corporations. The laws of some of the States, notably of Illinois, are very favorable for enterprises of a corporate character, and for some years past they have been launched at a rapid rate. The percentage of these resulting in genuine business undertakings and the actual investment of capital has been larger than would ordinarily be supposed. It was a comparatively

easy matter to take a patented article, interest a few persons in its manufacture and start a company. Now, however, speculation in this direction has been checked by the scarcity of money, and the promoters of the few corporations being formed are having a serious time in securing financial backing. Meritorious schemes, as well as those wholly speculative, suffer alike under the grievous pressure now resting on business all over the country.

#### Enlargement of Cramp's Shipyard.

Mayor Stuart of Philadelphia has signed an ordinance by which the long-desired facilities are given for extending Cramp's shipyard, so as to accommodate the large amount of work now on the books of that establishment. The Cramp Company will, it is said, now proceed with the construction of five great slips, over 600 feet long and 70 feet wide, which will be required for the five large American liners under contract. When all the enlargements and improvements which have been decided upon are carried into effect, Philadelphia will possess a shipbuilding plant the peer of any in the world, giving employment to a larger number of skilled mechanics and workingmen than any single industrial establishment in the Quaker City. At present there are 4500 men on the pay rolls, but 6000 will be required to run the plant on the increased scale contemplated. Cramps have now in hand seven war vessels for the Government—namely, the armored cruiser "New York," now nearing completion; the commerce destroyers "Minneapolis" and "Columbia;" battle ships "Indiana," "Massachusetts" and "Iowa," and the armored cruiser "Brooklyn." Besides these, work will shortly be commenced on the five ocean greyhounds to be built for the American line—namely, two of 10,500 tons and 540 feet long, and three of 13,000 tons, 600 feet in length. All other departments of the establishment are reported as very actively employed, the gun shops being filled with orders for the next nine months, and the brass foundry for another year.

In 1892 there were granted a total of 3417 Canadian patents, of which 2227 were taken by American citizens, 671 by Canadians, 298 by Englishmen, 106 by Germans, 26 by Frenchmen and 89 by persons of other nationalities. It will thus be seen that nearly two-thirds of all the patents granted in Canada are to American inventors, and but for them the Canadian Patent Office would make a very poor showing. The entire receipts of the Canadian Patent Office were \$84,720, and the expenditure was \$39,643, leaving a profit of \$45,000 over expenses. It may be said that American inventors chiefly support the Canadian Patent Office as well as the Patent Bureau at Washington.

According to French reports the torpedo boat "Lansquenet," launched at Nantes last month, has attained a speed of 26 knots, or nearly 30 miles, an hour. The "Lansquenet" is of 138 tons displacement, is 165 feet 6 inches long and 15 feet 8 inches broad, drawing 4 feet 3 inches of water. She has twin screws and two triple expansion engines, which together indicate 2800 horse-power. She probably is the fastest government vessel afloat.

## CORRESPONDENCE.

### Reported Steel-Casting Consolidation.

*To the Editor:* We notice in *The Iron Age* of June 22 an article on the reported combination of this company with others, whereby four concerns have been merged into one corporation, to be known as the Union Steel Casting Company. We beg to inform you that this report is erroneous so far as it relates to this company. Yours respectfully.

STANDARD STEEL CASTING CO.  
THURLOW, PA., June 23, 1893.

### The Wage Scale Conferences.

On Tuesday, the 20th inst., the first meeting between the Conference Committee of the Amalgamated Association and a number of the Pittsburgh iron manufacturers was held in the Ferguson Building in that city, and although daily sessions have been held right along since the above date, a settlement of the wage scale governing wages in rolling mills for 1893-94 has not been accomplished. At the outset, the manufacturers presented facts and figures to the workmen, showing conclusively that prices on finished material were much lower at this time than ever before in the history of the trade. The fact that several non-union concerns in the Pittsburgh district have been paying less than \$5.50 per ton for boiling was also pointed out, and the claim was made that concerns employing union labor should not be placed at such a disadvantage with their competitors. The manufacturers closed their case by asking for material reductions on the present scale, both in the boiling and finishing departments. To these arguments the committee representing the Amalgamated Association replied by stating that they could not see any good reasons why there should be any reductions made on the present scale, especially in view of the fact that the finishers accepted a reduction of 10 per cent. last year. The committee further stated that the proposition of the manufacturers to reduce boiling was unfair, in view of the fact that the puddlers had very laborious work to perform and should not be made to suffer any reduction. Long and exhaustive arguments were made by both sides in support of their respective positions, but up to this time an agreement has not been reached. So far the conferences have been of an exceedingly friendly character, and the impression largely prevails that no serious trouble will occur. While an agreement may not be reached for some days yet, it is more than probable that concessions will be made by both sides, and a scale based on \$5 per ton for boiling, with modifications in some of the extras, will be agreed to by both sides. In view of the great depression now existing in the iron and steel trades, coupled with the stringent financial situation, the manufacturers will use their utmost endeavors to avoid a conflict, which, should it occur, would only aggravate the situation. On the other hand, the Amalgamated Association has not forgotten, nor has it recovered from, the Homestead strike and other conflicts of last summer, in which it met defeat at every stage. In view of these facts a settlement of the wage scale without recourse to strikes or lockouts is highly probable.

Nothing has been done during the past week looking to another meeting of the sheet manufacturers and the Amalgamated Association, and it is doubtful if the two conference committees will come together this week. Although the manufacturers and the workmen have thus far failed to arrive at a settlement of the sheet scale, it is not believed that any serious trouble will occur, although the final settlement may be delayed for some time.

Several conferences have been held between Jones & Laughlins, Limited, of the American Iron & Steel Works, and the committee representing Excelsior Lodge No. 63 of the Amalgamated Association on the steel scale governing wages in the converting and blooming departments. It is understood that the firm will ask for some material reductions on the present scale, that will place them on a more equal footing with competitors who employ non-union labor, and have considerable advantage over the firm in prices paid for certain kinds of work.

### Restrictions on Welsh Tin-Plate Production.

For some time past the question of restriction in the output of tin plates has been causing considerable friction between employers and employed in some of the Welsh tin-plate manufacturing districts. In the interests of the workmen the Tin Platers' Union has decreed that 36 boxes is to be the limit turned out in one shift, this restriction being deemed necessary for the purpose of giving work all round and keeping the factories going; and in the present dull state of the market it has not been found difficult to induce the majority of manufacturers to permit the observance of this limit. But when busier times come, with increase of demand for tin plates, employers will, naturally, object to being tied down in this manner. They argue that it is contrary to reason where, as is the case with numbers of works, it is possible for the men to turn out from 60 to 70 boxes per shift, that they should be restricted to little more than half their capacity by such an iron-bound rule. In the Llanelli district particularly the hardship to the employers is much felt, as many of them have lately been to great expense in providing machinery and preparing for a large output, which outlay will be of no avail should they consent to the limitation dictated by the workers' union. Besides, they justly hold that such restriction, if imposed at all, should be general. This, however, is not the case, some manufacturers having, as we understand, refused to accept the demand of the union and are employing non-union men. Just at present matters in Wales are reported as being pretty quiet, owing, presumably, to the general flatness of business which has lately prevailed. But labor difficulties are likely to crop up in the future in regard to this point, both parties appearing resolute in maintaining their side of the question.

Tunis has just celebrated its transformation into a seaport. Hitherto passengers by the steamers of the Messageries Maritime have had to land at Goletta in small boats, the vessels not being able to come nearer than  $\frac{1}{2}$  mile to that port, which is  $7\frac{1}{2}$  miles down the lagoon from the capital of the Bey. The construction of a harbor 30 acres in extent and 23 feet in depth in the European part of the town was begun in 1888, and this

has been joined to the sea by a channel over 6 miles long and 70 feet wide. On each side there are jetties lighted by electricity.

### British Mineral Statistics for 1892.

The British Secretary of State for the Home Department has just issued the mineral statistics of Great Britain for the year 1892, which contain some specially interesting information with regard to the quantity of coal and iron produced and the prices obtained. The summary of the production of coal under the Coal Mines Regulation act shows a considerable falling off in the total output of coal in the United Kingdom as compared with the previous year, while at the same time there has been a very substantial drop in the approximate prices per ton at the mines. In 1891 the total output amounted to 185,479,126 tons at an average approximate price of 8 shillings per ton at the mines. Last year the total output only reached 181,786,871, and the approximate price at the mines had dropped to 7 shillings 3 pence. The total quantity of coal raised at the mines throughout England and Wales last year amounted to 154,483,067, and the average price at the mines was 7 shillings 6 pence per ton. This average price varied considerably in different districts—in Glamorganshire, with an output of 22,808,314 tons, ranging from 6 shillings 8 pence to 9 shillings 3 pence per ton, while for the very small output of 80,942 tons in Pembrokeshire, the average pit price amounted to 10 shillings 6 pence per ton. In Lancashire, with an output of 22,356,171 tons, prices ranged from 7 shillings 3 pence to 7 shillings 6 $\frac{1}{2}$  pence, and in Yorkshire, which is a closely competing mining district, with an output of 23,189,915, the approximate prices obtained at the pit ranged from 7 shillings to 7 shillings 9 pence per ton, and in Derbyshire, with an output of 11,141,152 tons, to 7 shillings 10 pence per ton. In Staffordshire, with a total production of 14,132,827 tons, prices ranged from 7 shillings to 7 shillings 5 pence, while in Durham, with a larger output than any other district, amounting to 23,834,027 tons, the prices ruled the lowest, only averaging 6 shillings 2 $\frac{1}{2}$  pence per ton at the pit mouth.

Throughout Scotland, with a total output of 27,191,923 tons, the approximate price was 5 shillings 9 pence per ton at the pit, and in Ireland, with an output of 111,881, 8 shillings 11 pence per ton at the pit. The total value of the coal raised throughout the United Kingdom last year amounted to £66,050,451, as compared with £74,099,816 in 1891. As 1892 was on all hands admitted to be a year of exceptional depression in the iron trade, it will be interesting to notice how this is borne out by the actual returns. These show a large reduction in the quantity of pig iron produced, the output for 1892 being 6,709,255, as compared with 7,406,064 tons in the previous year. The quantity of pig iron exported showed a similar falling off, amounting to 767,053 tons last year, as compared with 840,055 tons, in the previous year. The mean prices of pig iron at the works were for Cleveland £1. 18/7 per ton, as compared with £2. 0/1 in 1891, and for Scotch pig iron £2. 1/10 per ton, as compared with £2. 7/2 per ton in the previous year.

The aggregate capital invested in South Carolina cotton mills chartered by the State is calculated as \$8,929,800.

## San Francisco News.

The freight question still continues the all absorbing one, and at present occupies the public mind to the exclusion of almost every other subject. At present all the transportation companies are engaged in a mad race to see who can cut the lowest, and there is little doubt that as far as San Francisco is concerned freight rates will remain permanently low. The cut in rates to the Willamette Valley was quickly followed by the dollar a ton rate to Astoria, and that has been succeeded by the reduction of rates by the Pacific Coast Steamship Company to Southern California, to in some instances only 60 per cent. of what they had been before. This followed on preparations by the Traffic Association to put on a line of steamers to San Diego and way ports. As this would have taken away all the business of the Pacific Coast Steamship Company, they had nothing to do but to cut rates, and this they did, and stood not on the order of the operation. The Los Angeles Terminal Railroad now comes in and carries merchandise shipped by the Pacific Coast Steamship Company at very low rates to Los Angeles. Not only that, but they will ship goods from Los Angeles, north, into the San Joaquin Valley at rates with which there is no competition by any other route. It thus happens that a keg of nails, for instance, can be shipped from San Francisco to Los Angeles and thence back again to Bakersfield for 65 cents less than the same keg can be shipped by rail from San Francisco to Bakersfield direct. At present any article of hardware can be shipped cheaper from New York to San Francisco via Panama by steamer to San Pedro and by rail to Los Angeles than directly from New York by rail to Los Angeles. San Francisco will thus have the trade against all comers. And since this change has taken place the Union Pacific has so arranged through its agent here that a San Francisco hardwareman, for instance, can ship any article from this city to any point in Oregon or Washington midway between the Columbia and the Sound cheaper than the same thing can be done by any jobber in any Eastern city direct by rail. Thus San Francisco for the present at least controls the situation in hardware and metals, as well as in everything else in a commercial way, along the whole line of the Pacific Coast with the exception of a slight strip south of the Sound. It is an addition of 750,000 people to the number of her customers.

Our imports by sea for the past two weeks have not been very large. The "Roby" had 33,939 boxes of tin plate, and a lot of railroad iron, while the "Alameda" had 7651 ingots of tin from Sydney. Imports of tin plate have been large, and the market is weak in consequence. The figure for coke is \$5.80 to \$5.85, while pig tin is not in very active demand at 22 cents. The condition of the market in pig iron is in no way different from what it was at date of last communication, the range of American being \$19 to \$20, as representing the views of buyer and seller, while English and Scotch could not be had under \$22. As to hardware and iron generally, there was a better feeling, but this has been dampened somewhat by the conservatism of the banks consequent on the Eastern failures and those at Riverside and San Bernardino in Southern California, where three of our banks were obliged to suspend.

Arrivals by rail have fallen off. For the past fortnight they embraced 4 cars of stoves, 4 of agricultural implements, 2 of machinery, 4 hardware, 2 spelter, 2 iron roofing, 3 wagons, 1 safes, 1 boilers, 2 rakes, 1 copper wire, 6 castings, 1 hay presses, 2 pipe, 1 radiators. Total, 36 cars.

plates. Taken altogether, the book in its new form is a serviceable addition to the somewhat scanty literature of the trade, and will doubtless find a welcome among the sheet-metal workers in the United States.

## PERSONAL.

W. L. Abbott of Pittsburgh, formerly chairman of Carnegie, Phipps & Co., Limited, accompanied by his wife and family, sailed for Europe last week and will remain abroad for several months.

Otis H. Childs, Pittsburgh, formerly secretary of Carnegie, Phipps & Co., Limited, accompanied by his wife, sailed for Europe last week.

Herr Krupp, the well-known German gun manufacturer, is expected to visit Pittsburgh next month, remaining for a week or longer. The Chamber of Commerce of that city is making extensive preparations to entertain the distinguished guest and a public reception and banquet will probably be tendered him.

## New Publications.

METAL PLATE WORK: Its Patterns and Their Geometry; also Notes on Metals and Rules in Mensuration. For the use of Tin, Iron and Zinc Plate Workers, Coppersmiths, Boiler Makers, Plumbers and Others. By C. T. Millis, M. I. Mech. E. London: E. & F. N. Spon. New York: Spon & Chamberlain. 1893. \$3.50.

A second edition of the useful book of C. T. Millis on sheet-metal work has just been issued, which contains all the information included in the first edition, published five years ago, supplemented by some 70 pages of new and original matter. The work does not need any lengthened description, being, in its original form, well known to metal workers. The author is an established authority in the trade in Great Britain. He is now the head of the educational department of the Borough Polytechnic Institute of London, and also lecturer in sheet-metal work to the City and Guilds of London Institute, two of the foremost mechanical training schools in England. His qualifications, therefore, for a work of this kind are obvious. The present edition of "Metal Plate Work" is one of the Finsbury Technical Manuals. It is a well gotten up volume of 376 pages, with excellent text and illustrations, the latter including some 250 patterns, and is calculated to be an exceedingly useful manual to the sheet-metal worker anxious to master his trade. Starting with some introductory geometrical problems, the work is divided into four sections. The first three treat, respectively, of "Patterns for Articles of Equal Taper or Inclination," as pails, oval teapots, strainers, &c.; "Patterns for Articles of Unequal Taper and Inclination," as baths, hoppers and canister tops, and "Patterns for Miscellaneous Articles," elbows and articles of compound bent surfaces, such as vases, aquarium stands, moldings, &c. The fourth division comprises a chapter on the metals, alloys, solders and soldering fluxes mostly used by metal workers, and one on the more important seams or joints used in sheet-metal practice. It concludes with a number of useful practical rules in mensuration, and tables of comparative weights and gauges of various metals, together with the strength, sizes and weights of tin

## MANUFACTURING.

## Iron and Steel.

The plant of the Republic Iron Works, on the South Side, Pittsburgh, was damaged by fire last week to the extent of about \$4000, the loss being fully covered by insurance.

We are advised that the report that H. C. Frick of Pittsburgh and Jerry Butterworth of Cincinnati were negotiating for the erection of a large steel plant at Cincinnati, to manufacture Heckert's projectiles, is without foundation.

A new steel steamboat built by James Rees & Sons of Pittsburgh was launched there last week. The boat was built for Thebraudt Brothers of New York, and will be used in Mexican waters. The boat is 100 feet long, 70 tons burden and draws 3 feet of water. The boat cost about \$40,000.

The Shiffler Bridge Company of Pittsburgh have received a contract for the erection of a large pump and dynamo house from the Ohio Steel Company, Youngstown, Ohio.

The Toledo Bridge Company of Toledo, Ohio, are building an addition to their plant 90 x 250 feet in size, which will be equipped with machinery for the manufacture of structural iron. When the new addition has been completed and put in operation 100 additional men will be given employment.

The Niles Tool Works of Hamilton, Ohio, have plans about completed for the erection of a large foundry which will be built adjacent to their present plant. The new foundry will be 120 x 400 feet, the building being all iron, slate and brick. The walls where there are no windows will be of cement plaster applied on corrugated iron lathing.

The Belmont Furnace of the Belmont Nail Company, Wheeling, W. Va., was blown out last week for relining and repairs. The furnace will resume blast as soon as repairs have been completed.

The Bessemer plant of the Wheeling Steel Works, owned and operated by the Wheeling Steel & Iron Company, Wheeling, W. Va., will close down about July 1 for extensive repairs. It is probable the plant will be idle for two months or longer.

At the annual meeting of the stockholders of the Burden Iron Company the following trustees were chosen: James A. Burden, I. Townsend Burden, John L. Arts, James A. Burden, Jr., and Nicholas J. Gable. The trustees subsequently elected the following officers: President, James A. Burden; general manager, John L. Arts; secretary, Nicholas J. Gable.

Judge Acheson of the United States Circuit Court, Pittsburgh, has handed down an opinion in the case of L. H. Bristol and others, stockholders in the Scranton Steel Company, Scranton, Pa., against Wm. W. and Walker Scranton. The suit was to compel the defendants to pay into the treasury of the Scranton Steel Company \$350,000 worth of bonds of the Lackawanna Iron & Coal Company. This company and the Scranton company consolidated as the Lackawanna Iron & Steel Company. The Scrantons were president and secretary of the Scranton company, and received the \$350,000 of bonds not to go into any competing business for ten years. The other stockholders of the Scranton company wanted this money paid into the common treasury, claiming the Scrantons had no right to receive it. The Scrantons claimed the Scranton Steel Company had nothing to do with the matter, and it was a compensation to them for not re-engaging in business. Judge Acheson, in his opinion, took the same view as the defendants and dismissed the suit.

S. Jarvis Adams & Co., malleable iron founders at Pittsburgh, have entered suit against the Duquesne Tube Works Company, Duquesne, Pa., for \$4279.89 for merchandise sold.

The Tennessee Coal, Iron & Railway Company have declared their regular semi-annual dividend, payable July 15.

The rolling mill at Birmingham, Ala., which has been operating to its full capacity for some time past, will, it is stated, shut down in about two weeks for the usual annual repairs.

The Belmont Blast Furnace, as well as the Top Mill, of the Wheeling Steel & Iron Company, at Wheeling, W. Va., will be improved. The Top Mill will be rebuilt and its capacity increased, and the furnace will be relined and otherwise greatly improved.

Fires were started at the steel plant at Middlesborough, Ky., last week, for the purpose of testing the machinery and the quality of the pig iron. It is now the understanding that the plant will be pushed to completion and will be put in operation by August 1.

The Norton Iron Works Furnace, at Ashland, Ky., will shut down this week because of the dullness in the pig-iron market.

The Talladega Furnace Company of Talladega, Ala., have issued \$200,000 in bonds, secured by mortgage on their property, and a stockholder says that as soon as the bonds are floated the furnace will be put in operation.

The new rolling mill of the United States Car Company, at Anniston, Ala., was started up last week. The mill will make merchantable bar iron only.

It was expected that the steel works at Troy, N. Y., would shut down for the summer last week, but a number of orders are on hand which will make it necessary to run some time longer. The first part of the present week was used in working on the cold steel. Small orders are being received for 50 to 200 tons, and a big consignment may be expected at any time. In the event of unexpected orders of any size coming in the steel works may continue in operation throughout the summer.

The Eagle Iron & Steel Company of Iron-ton, Ohio, manufacturers of iron and steel sheets and bars, have recently added to their plant a large two-ball squeezer. The forge department of their plant was shut down for about a week while the squeezer was being erected. After July 1 the entire plant of this concern will be closed down for stock taking and to await wage-scale developments.

Announcement is made that the Oil Well Supply Company of Pittsburgh will soon recover from the present financial embarrassments which at present surround that concern. A large number of creditors have agreed to allow the concern an extension, and it is believed that a sufficient number will agree to this action, by which the affairs of the company can be taken out of the receiver's hands. A statement is now being prepared and will be ready for the creditors in a few days which will show the exact condition of affairs. It is believed that after this statement has been issued there will be no difficulty in securing the desired extension.

The Liggett Spring & Axle Works of Allegheny, Pa., have commenced the erection of a large warehouse.

The Ordnance Department of the Navy have prepared advertisements calling for nearly 1,500,000 pounds of steel forgings, to be used in the construction of 4, 5, 8 and 12 inch guns.

#### Machinery.

It is reported that a large concern making pumps, pump tubing and water pipe, with works at present located in New York, have about completed a deal with the Morgantown Building & Investment Company of Morgantown, W. Va., for the removal of their works to Morgantown.

The Pittsburgh Locomotive Works of Allegheny, Pa., have received a contract from the Manhattan Elevated Railroad of New York City for 20 locomotives of the latest type. The contract calls for the delivery of these locomotives in September and October.

The Arctic Machine & Mfg. Company of Cleveland, Ohio, are preparing plans with a view to making a large addition to their plant.

The Oswego, N. Y., Machine Company will build a new plant. The structure will be of stone and brick, and of the slow burning construction, 200 feet long and 60 feet wide. The engine and boiler house will be in a separate building. The construction of the new building will be pushed as rapidly as possible.

The Tonkin Boiler and Machine Shop, at Oswego, N. Y., will probably be in opera-

tion by August 1. There has been some delay in receiving the machinery.

The Priestman Engine Company have removed their offices to their works, Front street, below Tasker street, Philadelphia.

New additions are being made to the plant of the Trevor Mfg. Company of Lockport, N. Y. Their new building will be 30 x 75 feet, of stone, and four stories high. The new building will be completed before fall and will accommodate some of the machinery now in use and also new machinery. The company make a great number of wood-working machines of their own patent, including special machinery for pulp mills, lathes and sawing machines, &c. They are now making brass molds for the Indurated Fiber Company of Lockport. They are also making the dies for the new dashboard factory to be located at Lockport, and are putting in the pumps, &c., for a large quantity of portable fire extinguishers for the Pennsylvania Railroad. The barrel or frame of these is made of indurated fiber and the pumps of brass.

The Fitzgibbons Boiler Company of Oswego, N. Y., expect to be able to begin operations in their new plant at that place in a few weeks. The officers of the company are: President, Robert S. Sloan; vice-president and treasurer, Theodore Irwin, Jr.; secretary, Joseph M. McGowan; general manager, Patrick Fitzgibbons.

The Catskill, N. Y., Foundry & Machine Works expect to turn out a large number of the Lacy electric car trucks this summer, and to have a large force of employees. The new truck is now being tested on a number of prominent electric roads.

Thos. Devlin & Co. of Philadelphia have just completed a handsome addition to their establishment. The new building is six stories high, 140 feet long by 40 feet wide, and will considerably increase their facilities for turning out goods, and enable them to keep well up with the increase in their trade connections.

The Ferracute Machine Company's Works, at Bridgeton, N. J., were started into operation again on Monday, after a shut down of two weeks, caused by a strike of the workmen.

The National Pipe Bending Company of New Haven, Conn., manufacturers of the National feed water heater, send us a list of recent sales made by them. The list embraces 47 firms, in all parts of the country, to whom sales have been made of heaters of 100 to 1200 horse-power. The company also manufacture coils and bends of iron, brass and copper pipe.

The B. F. Sturtevant Company, Boston, Mass., have printed a third edition of 10,000 copies of their 200-page General Catalogue No. 61, which describes the uses of their blowers, exhausters, engines, forges and heating and ventilating apparatus.

The business of last month was the largest ever done by the Curtis Mfg. Company of St. Louis, builders of engines, boilers, saw mills, edgers and complete plants for saw, shingle, heading and planing mills.

The George A. Gray Machine Company have bought the plant of the Radial Drill Company, at Covington, Ky., and will at once equip it for the manufacture of machinery and machine tools. The place was fitted up only a few weeks since by the Radial Drill Company, but they were forced to assign before commencing operations.

At the annual meeting of the stockholders of the New York Air Brake Company, held in New York City last week, more than 40,000 shares of stock were represented. The same Board of Directors was unanimously re-elected. The annual report showed an increase of sales as compared with the preceding year of over 84 per cent., and a net profit earned, after payment of all expenses, of \$229,896.68.

Among recent shipments of rolling mill machinery made by the Lloyd Booth Company of Youngstown, Ohio, was a set of rolls to the Durango Steel & Iron Company, Durango, Mexico; a 22-inch sheet train to the Sharon Iron Company, Limited, Sharon, Pa.; a special sheet bar shear, with automatic feed table, to the Bellaire Nail Works, Bellaire, Ohio; and a large lever shear to the Colorado Fuel & Iron Company, Denver, Col. The Lloyd Booth Company have recently received an order from the Arethusa Iron Works of New Castle, Pa., for a 126-inch squaring shear.

#### Miscellaneous.

The Pittsburgh Plate Glass Company, operating three large plate-glass plants at Tarentum, Creighton and Ford City, Pa., closed them all down last week, throwing about 4000 men out of employment. All plate-glass plants in the country, without a single exception, are now idle and will not resume operations until there has been a decided improvement in the demand for plate glass.

A press dispatch from Ishpeming, Mich., under date of June 22, reads as follows: The Norrie mine at Ironwood closes down tonight. It has been working a half force of 650 men, but will stop everything now, except shipping from stock piles. Other big mines at Ironwood are reducing their forces also. The Norrie is the largest iron mine in the world, and produced over 1,000,000 tons of ore last year.

The Carter Company of Niagara Falls, N. Y., will soon meet to vote on the question of consolidating that concern with the Rodwell Manufacturing Company, who are now building a large plant in that city, and also the Niagara Fibre Ware Company and the Hansmann Art Metal Company, all now in operation at Niagara Falls, and also five other manufacturing companies now at Dayton, Ohio. These Dayton companies are the Crume & Sefton Company, Dayton Printing & Manufacturing Company, Dayton Autographic Register Company, National Mercantile Company and the Merchants' Supply Company. The consolidated interests would employ over 1000 hands, the Carter Company at present employing 200.

The Shultz Belting Company, St. Louis, Mo., advise us of a shipment of a large line of double belting for fitting up a distillery in Vladivostock, Russia. Their local trade is heavy, and their business for the first half of the year shows a gratifying increase over last year.

The Sam'l Winslow Skate Mfg. Company, Worcester, Mass., have increased their capacity in every department, so they advise us their capacity is in excess of their needs and that, consequently, they will be able to take care of the late trade. Included in the improvements recently made in the plant is a complete system of blowers in the polishing and buffing departments.

Among recently authorized corporations in Illinois are the following: National Boiler Works, at Chicago; capital stock, \$100,000; for the manufacture of boilers, tanks and coolers; incorporators, Robert A. Bee, Frank M. Cox and Martin M. Gridley. The Gasconade Onyx Mining & Mfg. Company, at Chicago; capital stock, \$500,000; for mining and manufacturing onyx and marble; incorporators, T. A. Sprague, J. E. Davison and Andrew S. Miller. The Secret Weighing Register Company, at Chicago; capital stock, \$2,000,000; for manufacturing; incorporators, I. R. Burns, Walter F. Burns and Sam P. Walker. The Wire Bound Packing Box Company, at Chicago; capital stock, \$300,000; for the manufacture of packing boxes and machinery for the manufacture of packing boxes; incorporators, Henry Stephens, Geo. E. Read and George Dickinson.

The Hazard Mfg. Company of Wilkes-Barre, Pa., have recently furnished to the Citizens' Traction Company, at Pittsburgh, a wire cable 25,800 feet long and which weighs about 75,000 pounds. The order for this cable was secured through N. P. Hyndman, Pittsburgh representative of the Hazard Mfg. Company.

Geo. F. Ott of the Progress Copper, Brass & Iron Works, Philadelphia, reports business exceptionally brisk. He has many large orders in hand for work for breweries, sugar refineries, distilleries and chemical works, and is able to furnish employment for about 100 hands.

The Detroit Dynamo Company, Detroit, Mich., are manufacturing dynamos the special feature of which is claimed to be automatic regulation without the use of a rheostat or other regulating device. They also equip hotels with the Herzog teleseme system fire alarms, room calls, bells and annunciators, speaking tubes, &c. They also install motors for ventilation and power, and are agents for the eco-magneto watchman's clock.

It is stated that the Rio Tinto Company have decided to remove their copper works from Cwmavon, Wales. The news has created consternation in the district, of the trade of which they were the mainstay.

# TRADE REPORT

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,  
PHILADELPHIA, Pa., June 27, 1898.

The week past has been merely a repetition of several preceding, and has developed no change in the Iron market worth noting. Things have got duller, and in spots prices are weaker, but the extreme paucity of stocks prevents anything like a general break, and while no very decided improvement is looked for, neither is it considered possible that there can be any material decline. Under such conditions, it is difficult to induce either buyers or sellers to abandon their attitude of indifference, the former being convinced that they can place orders almost any time they desire to do so without much advance in prices, while sellers feel that rather than make concessions they would go out of business. Moreover, the season of the year is one in which various adjustments have to be made, which, in connection with the unsettled condition of the money market, confirms all parties in their determination to make no new ventures, but to simply maintain a defensive position until they see some good reasons for taking a more aggressive attitude. This will probably continue some time longer, although, as we have already intimated, buyers and sellers alike are holding themselves ready to change around the moment that such a course may seem desirable.

**Pig Iron.**—Not much buying, and not much good Iron offered. The new freight rates from the South cut that class of Iron pretty well out of the market, and as local furnaces are well sold up it leaves very little good stock for sale. But while the supply is small the demand is still smaller, so that sales are both few and unimportant, the strong point being that deliveries are freely taken, leaving the furnaces with very little material on hand, thereby enabling producers to maintain firm prices. Consumption will doubtless show a sharp falling off during the coming month, but there is no reason to suppose that it will increase stocks to any serious extent, as the output at furnaces has already been adjusted to a reduced consumption. At all events, this appears to be the general impression, and unless something unforeseen occurs, current prices are believed to be safe prices. The demand is not expected to show much improvement during the next couple of weeks, but prices will probably remain about as follows for Philadelphia and vicinity, and from 20 to 30 cents less for Southern Irons at points accessible by water:

American Scotch, No. 1X...	\$16.00	@ \$18.50
American Scotch, No. 2X...	15.00	@ 15.50
Standard Penna. (Lake Ore), No. 1x.....	15.00	@ 15.50
Standard Penna. (Lake Ore), No. 2x.....	14.50	@ 14.75
Standard Virginia, No. 1x...	14.75	@ 15.00
Standard Virginia, No. 2x...	13.75	@ 14.25
Virginia and Southern, No. 1x, Soft.....	14.25	@ 14.50
Virginia and Southern, No. 2x, Soft.....	13.50	@ 13.75
Standard Penna. and Vir- ginia Forge .....	13.00	@ 13.25
Ordinary Forge.....	12.50	@ 12.75

**Steel Stock.**—Nothing doing of any importance. A few small lots have been taken at about last week's prices, say \$13.50, delivered, for ordinary Red Short; \$16.25 @ \$16.50 for standard Bessemer, and \$18 @ \$18.25 for Low Phosphorus.

**Steel Billets.**—Business seems to have dropped completely out of sight, although manufacturers are disposed to make what appear to be liberal concessions. July deliveries of Western Steel are offered at \$24, and at still lower figures for later dates; but in the absence of sales prices can only be guessed at, although consumers intimate that they have been asked to bid \$23.25 for 1000-ton lots. There is no particular scarcity, however; hence consumers are unwilling to anticipate their requirements.

**Steel Rails.**—No change from last week, prices being \$29 for standard Rails, and \$34 @ \$36 for Girders; the latter being in good demand. Price for the latter usually includes all necessary fittings.

**Muck Bars.**—Nothing doing, holders asking \$22.50 @ \$23 f.o.b. cars at their mills, equal to \$23.25 @ \$23.50 delivered.

**Bars.**—Not much change from last week. There is some business doing all the time, and best makes command about 1.65¢, city delivery, but there is plenty of good Iron at 1.60¢, and in car-load lots and upward that quotation can be liberally shaded. At interior points 1.50¢ @ 1.55¢ is asked, although it is said that a very fair quality of Iron can be had at these figures delivered. Manufacturers are in hopes that the suspension of work during the coming week will bring in a few more orders, but at best the outlook is not encouraging. Steel Bars 1.50¢ @ 1.75¢, according to quality.

**Skelp.**—Business is gradually tapering off, and while 1.52½¢ @ 1.55¢ is quoted for Grooved Skelp delivered, it only needs the right kind of an order to secure better figures than these, probably 1.50¢ on 500 ton lots and upward.

**Plates.**—The demand for Plates keeps up better than almost any other specialty, although some mills find it difficult to run more than single turn. Others are working pretty near to their full capacity, but have very little on the books beyond what can be completed this month, so that they are all looking anxiously around for new business. There has been a kind of vague hope that prices may be better when the mills start up after the holidays, but it is hard to see how it can be done. There is not enough work to go around at prices already ruling, and, without a better demand, it will be impossible to get better prices. Later on these hopes may perhaps be realized, but temporarily the chances seem to be rather in the opposite direction. Nominal quotations (delivered) are about as follows, but on desirable orders very liberal concessions can be had by shopping around :

	Iron.	Steel.
Tank Plates....	1.80 @ 1.85¢	1.75 @ 1.80¢
Shell.....		2.10 @ 2.20¢
Flange.....	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box.....	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities.....		3.25 @ 3.75¢

**Structural Material.**—The only orders of interest are those for the Philadelphia Bourse—about 3000 tons—and two of several hundred tons each for hotels and apartment houses in Philadelphia. Mills are fairly well employed, however, and after a brief suspension for repairs, &c., during the next two weeks, they expect to continue as during the past several weeks, but at extremely low prices. The outlook is not bright; although there is a considerable amount of work on the books, the trouble is to get the buyers to send in their specifications. The shipyards are

doing well, and it is understood that Cramps Shipbuilding Company will increase their force to 6000 hands, the number now employed being about 4000. The mill capacity is so large, however, that it is almost impossible to run full, hence sharp competition and low prices on every order that is worth looking after. Nominal quotations are as follows for small lots, but lower on good sized orders. Beams, Channels or Tees, 1.90¢ @ 2.10¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.75¢ @ 1.80¢.

**Sheets.**—The demand is very slow, jobbers taking only such small lots as are immediately required. Manufacturers are not pushing sales at the low figures accepted for Western stock, believing that there will be a better market later on; and in the (not altogether improbable) event of a protracted shutdown, there would be quite a scarcity, as mills are not piling up stock to any extent. Prices are very low, and very weak, too, the following being for small lots of best makes, and subject to liberal shading on good-sized orders:

Best Refined, Nos. 14 to 20...	2.75¢	@ 2.85¢
Best Refined, Nos. 21 to 24...	2.90¢	@ 3.00¢
Best Refined, Nos. 25 to 26...	3.15¢	@ 3.20¢
Best Refined, No. 27.....	3.30¢	@ 3.40¢
Best Refined, No. 28.....	3.40¢	@ 3.50¢

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ½¢ lower than here named :

Best Soft Steel, Nos. 14 to 16...	2½¢	@ 2.5¢
Best Soft Steel, Nos. 18 to 20...	2¾¢	@ 3¢
Best Soft Steel, Nos. 21 to 24...	3½¢	@ 3½¢
Best Soft Steel, Nos. 25 to 26...	3¾¢	@ 3¾¢
Best Soft Steel, Nos. 27 to 28...	3¾¢	@ 3¾¢

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, dis....70 and 5%

@ 70 and 10%

**Old Material.**—Is extremely dull and hardly salable at any figure that holders can accept without loss. Asking prices are about as follows, but on forced sales considerably lower figures would have to be accepted: Old Iron Rails, \$16.50 @ \$17, delivered; Old Street Rails, \$18 @ \$19; Old Steel Rails, \$15 @ \$15.50; No. 1 Railroad Scrap, \$14.50 @ \$15, Philadelphia, or for deliveries at mills in the interior, \$8 @ \$9 for clean new No. 2 Light Scrap; \$7 @ \$7.50 for old No. 2 Light Scrap; \$11 @ \$12 for Machinery Scrap; \$11 @ \$11.50 for Wrought Turnings; \$7 for Cast Borings, and nominally \$20 for Old Fish Plates, and \$18 for Old Car Wheels.

**Wrought-Iron Pipe.**—Demand very limited, and prices almost anything that buyers choose to name when the order is first class. Discounts nominally as follows, but an extra 5% or more not hard to get:

Butt-Welded Black.....	57½%
Butt-Welded Galvanized.....	50%
Lap-Welded Black.....	67½%
Lap-Welded Galvanized.....	57½%
Boiler Tubes, 2½ inches.....	65%
Boiler Tubes, 3 inches.....	67½%

## St. Louis.

(By Telegraph.)

Office of *The Iron Age*,  
Bank of Commerce Building, }  
St. Louis, June 28, 1898.

**Pig Iron.**—The past week has shown a remarkable increase so far as the volume of trade is concerned. Sales will aggregate 8000 to 9000 tons, which was divided in lots of from 500 to 1000 tons, indicating that some consumers think

the market has reached its lowest point and are taking advantage of the present low prices. The financial stringency which has prevailed throughout the entire country seems to have affected St. Louis very slightly, and manufacturers have no trouble securing funds for legitimate use. They are thus enabled to enter the market at this time, and will doubtless be gainers thereby. Consumers, as a rule, are not overstocked with Iron, and many of them are buying only as their immediate needs require. The present stagnation cannot last forever, and conservative judgment seems to fix upon August 1 as the turning point. If this prove correct buyers will be all in the market about the same time, and the natural result will be a sharp advance in prices. Prices to-day are no higher than last quoted, but many of the low-priced Irons which have been on the market the past two months are not now offered for sale, probably because the furnace order books are well filled. The general situation shows somewhat of an improvement—not much, it is true, but a change, no matter how slight, from the continual downward course is encouraging. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry .....	\$13.25 @ \$13.50
Southern Coke, No. 2 Foundry .....	12.00 @ 12.25
Southern Coke, No. 3 Foundry .....	11.00 @ 11.25
Southern Gray Forge .....	11.25 @ 11.50
Southern Car Wheel.....	18.25 @ 19.25
Lake Superior Car Wheel..	17.00 @ 17.50
Ohio Softeners.....	16.00 @ 17.00
Missouri Charcoal, No. 1 Foundry.....	13.00 @ 13.50

**Bar Iron.**—Complaints regarding low prices are becoming more general every day, and there is talk of some of the leading mills shutting down rather than continue at the low prices now prevailing. The car manufacturers are cutting down their working forces and the consumption of Bar Iron is adversely affected thereby. As the situation now stands the usual shut down during July for repairs will doubtless be lengthened out perhaps during August, or at least until the demand assumes such proportions as will enable manufacturers to secure better prices. Some mills offer Iron at 1.42½¢, f.o.b. cars East St. Louis, but 1.45¢ seems to be the general quotation. Jobbers ask 1.55¢ @ 1.60¢, according to quantity.

**Barb Wire.**—The movement of Barb Wire is limited to small transactions and prices are weaker. Mills are now quoting Painted at 2¢ in carload lots to jobbers, with 45¢ per cwt. additional for Galvanized. Jobbers quote 2.10¢ @ 2.15¢ to the country trade, and report a fair trade at these prices.

**Wire Nails.**—There is no change to note in this department, and \$1.50 @ \$1.55 continues to be the market for carload lots to jobbers. Sales to the country trade are made at \$1.60. The unfavorable feature of the market is the steady increase of stocks in manufacturers' hands.

**Rails and Track Supplies.**—The demand for Steel Rails has ceased almost entirely. Prices are quoted at \$31 @ \$32, according to quantity. Track Supplies are dull at the following prices: Splice Bars, 1.70¢; Spikes, 2¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.80¢. Old Iron Rails are offered at \$16 @ \$16.50, without, however, finding any buyers.

**Pig Lead.**—Extreme weakness prevails in this department. In our last re-

port we quoted 3.35¢, with the prospect of still lower prices prevailing. Today offerings are made on the basis of 3.25¢ without finding any buyers. It is stated by some of the best posted men in the trade that in a few weeks present prices will be considered high, and they further state that 3¢ lead will prevail before July is out. This seems to be almost impossible, but the market is acting in a way which, if it continues, will lead to the figure just mentioned. There is very little trade and sellers are much discouraged with the outlook.

**Spelter.**—The position of Spelter is practically the same as last reported. There is nothing doing and the nominal price is 3.90¢ for deliveries extending over the next three months.

## Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO. June 28, 1893.

The volume of business has increased very considerably within the past week, owing partly to the closing of season contracts by the large agricultural implement manufacturers and partly to the rapid approach of July 1, when so many mills will be shut down throughout the West. The demand for Finished Iron and Steel has been larger than had been expected in view of the depressing financial conditions, as many consumers thought it advisable at last to make some preparation for the anticipated curtailment of production. The increased movement has had no effect on prices, however, which still manifest a downward tendency.

**Pig Iron.**—Contracts covering about 30,000 tons were secured by local Pig-Iron manufacturers from agricultural-implement manufacturers to cover their requirements during the next 12 months. These purchases do not cover the entire field, but there are others to follow. The concerns which have just closed have bought about the same quantity that they purchased last year. This movement may be regarded as of much importance, indicating that the shrewdest buyers believe that at present prices Pig Iron is a good purchase and that they will accomplish nothing by holding off any longer. They have bought a little more than they did last year, and it may therefore be assumed that they have taken into consideration all possible contingencies that may arise in the immediate future to further depress the price of Pig Iron.

It is expected that their example will be followed by other large consumers of Pig Iron, who have been undecided what to do and have recently been buying in small quantities only while they awaited developments. The prices made have not been disclosed, and were undoubtedly low, but the sellers state that they have not sacrificed values merely to secure business.

There are also indications of an improvement in the demand for Southern Coke. Consumers who have been holding off for a long time have been obliged to purchase material, and there has been a somewhat better volume of business. The inquiry is increasing, but it is admitted that there is a general hunt for bargains.

Southern Foundry grades are weaker than Soft Irons under greater pressure to sell. Lake Superior Charcoal has slightly receded, as makers are, at least to some extent, endeavoring to realize on the stock which they have been so long carrying. The weakness on this class of Iron is for immediate delivery and

prompt cash; season contracts would hardly be placed at the prices now current. So many Charcoal furnaces are out, and will probably be for the remainder of the year, that those who are able to carry their stocks expect to realize much better prices next fall or winter. We revise our quotations in the light of recent events, but they are subject to concessions in nearly every case for immediate delivery and for prompt cash.

Lake Superior Charcoal.....	\$15.75 @ \$16.00
Local Coke Foundry, No. 1.....	13.50 @ 14.00
Local Coke Foundry, No. 2.....	13.00 @ 13.25
Local Coke Foundry, No. 3.....	12.75 @ 13.00
Local Scotch.....	14.0 @ 15.00
Ohio Strong Softeners.....	15.75 @ 16.25
Southern Silvery, No. 1.....	@ 15.00
Southern Silvery, No. 2.....	14.50 @
Southern Coke, No. 2.....	12.75 @ 13.00
Southern Coke, No. 3.....	12.25 @ 12.50
Southern, No. 1, Soft.....	12.75 @ 13.00
Southern, No. 2, Soft.....	12.25 @ 12.50
Southern Gray Forge.....	11.75 @ 12.00
Tennessee Charcoal, No. 1.....	16.50 @ 17.00
Alabama Car Wheel.....	@ 18.85
Coke Bessemer.....	14.50 @ 15.00
Hocking Valley, No. 1.....	16.75 @ 17.00
Jackson County Silvery.....	16.75 @ 17.00

**Bars.**—Important contracts have been taken for large quantities of Bar Iron and Soft Steel Bars by manufacturers of agricultural implements. The competition for these contracts was very lively, and the developments are by no means satisfactory to large establishments who have heretofore commanded this class of business. Other concerns have captured orders to which the former thought they were entitled, but the newcomers were willing to make lower prices, notwithstanding the very long time in which deliveries were to be made. The placing of season contracts is now proceeding at such a good rate that in the course of the next two weeks the movement will likely be general in this line. A very great deal of business is therefore now in sight. Most contracts of this character are as large as, if not larger than, they were last year. This is a good sign, indicating that the managers of these great interests have not lost hope; for, generally speaking, the trade has not been so active this season, although some sellers report a decidedly better movement among their customers in securing stock to guard against the possible scarcity by the closing down of mills after July 1. Current quotations are unchanged at 1.45¢ @ 1.50¢, half extras, Chicago, on Bar Iron, and 1.60¢ @ 1.65¢ on Soft Steel. Store prices are 1.65¢ @ 1.75¢ for Bar Iron, and 1.70¢ @ 1.80¢ for Soft Steel.

**Structural Material.**—A little more activity is noticeable among consumers of Beams, who are trying hard not to be caught as they were last summer, when the closing of the mills advanced prices on them sharply. The demand for Angles and other materials of this character has been light. Mill shipments are still quoted as follows, Chicago delivery: Beams, 1.80¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.75¢ @ 1.85¢. Small lots are selling at 15¢ @ 20¢ # 100 advance.

**Plates.**—The Plate trade is very quiet. Dealers state that the volume of business which they usually get at this time of the year from the Northwest and along the Mississippi and Missouri rivers is unusually light. Tank Plate is weak in some directions, but the market here is not quite so low as reported in other locations. Quotations on mill shipments, Chicago delivery, are as follows: Tank Steel, 1.75¢ @ 1.85¢; Shell Steel, 2.05¢ @ 2.15¢; Flange Steel, 2.20¢ @ 2.30¢; High Grade

**Fire Box**, 2.75¢ @ 5¢. Store prices are as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.20¢ @ 2.40¢; Shell, 2.35¢ @ 2.50¢; Flange Steel, 2.60¢ @ 2.80¢; Boiler Tubes, 67½¢ @ 70¢.

**Sheets.**—Black Sheets are selling to a limited extent at 2.80¢ @ 2.85¢, Chicago, for No. 27 Common from mills. The demand is not large, but on the other hand the mills report order books well filled. Galvanized Iron is in lighter demand than for some time, but quotations on mill shipments are continued at 70 and 10% discount for Juniata. Sheet Copper is unchanged at 30 and 5¢ for small lots.

**Merchant Steel.**—Nothing new has developed in this line. Trade is quiet, but the leading manufacturers appear to be disinclined to attempt to stir up business by cutting prices. The following quotations on mill shipments, Chicago delivery, still continue: Smooth-Finished Machinery, 1.90¢ @ 2¢; Open Hearth Spring and Smooth-Finished Tire, 2¢ @ 2 10¢; Iron-Finished Tire, 1.70¢; Ordinary Tool, 6¢ @ 7¢; Specials, 12¢ and upward.

**Rails and Track Supplies.**—Manufacturers of Steel Rails report only a moderate volume of business; prices steady at \$30 @ \$32, according to quantity. Fastenings are unchanged, as follows: Iron and Steel Splice Bars, 1.60¢ @ 1.70¢; Track Bolts with Hexagon Nuts, 2.55¢ @ 2.60¢; Spikes, 1.85¢ @ 1.95¢.

**Old Rails and Car Wheels.**—Transactions in Old Iron Rails are reported which aggregate about 10,000 tons. The sales were made on account of Western railroads not in this immediate territory, so that it is difficult to determine what the price would be here on a parity with such transactions. Shipments were to be made to points further East, deliveries beginning immediately and prompt payment to be made, so that it is likely that very low prices were secured by the buyers. In the absence of transactions here quotations are nominally \$17 @ \$17.50. Old Steel Rails are neglected, but are nominally quoted at \$11 @ \$14, according to length. Old Car Wheels are quiet, with quotations nominally \$14.50 @ \$15.

**Scrap.**—Some demand is reported for Cast Iron, but other kinds of material are very quiet. Steel Scrap is completely neglected. The following quotations represent prices per net ton at which material would probably be sold in this market at present: No. 1 Forge, \$12; No. 1 Mill, \$9; Sheet Iron, \$5; Pipes and Flues, \$7.75; Axles, \$20; Horse-shoes, \$12; Fish Plates, \$14.50; Spikes and Bolts, \$12.50; Cast Borings, \$5.25; Wrought Turnings, \$7.25; Axle Turnings, \$9; Heavy Cast, \$10; Stove Plate, \$8; Malleable Cast, \$8; Mixed Steel, \$9.50, gross ton; Leaf Steel, \$16.

**Metals.**—Copper is steady at 11½¢ for carload lots of Lake and 10.50¢ for casting brands. Spelter is quiet at about 4.10¢. Pig Lead is quoted 3.40¢ @ 3.50¢.

Legislation by dynamite has again been tried by European anarchists. This time it is in Madrid, and the object of attack the ex-premier of Spain. Senor Canovas di Castillo escaped uninjured, however, while it is believed the authors of the attempt have been "hoisted with their own petard."

## Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., Cincinnati, June 28, 1893.

There is no improvement in the Pig-Iron trade, and the existing monetary depression seems to bear with greater weight upon the business with each succeeding week. Consumers of Pig-Iron who are undoubtedly solvent cannot pay their paper as it becomes due, and must be accommodated by renewing it. The furnaces are willing to sell at previous prices when they are satisfied with the responsibility of buyers; but such buyers are not disposed to increase their obligations, and much Pig-Iron due on contracts is being held back until July. In these times buyers with ready money can make almost their own terms, for if the stronger Iron companies will not grant them there are many furnaces that will; but such buyers are only too scarce. The trade is in such a demoralized condition that it is difficult to diagnose the market, if, indeed, there can be said to be a market; but no change in quotations seems to be justified. There is much talk of the suspension of production of Pig-Iron until more favorable times, but this matter is uncertain. While the melting of Iron is much restricted in this district, there is yet a considerable volume of business, but the purchases are mainly in single carloads. Quotations are as follows:

### Foundry.

Southern Coke, No. 1 .....	\$13.00 @ \$13.25
Southern Coke, No. 2 .....	11.50 @ 11.75
Southern Coke, No. 3 .....	11.00 @ 11.25
Ohio Soft Stone Coal, No. 1 .....	16.00 @ 16.25
Ohio Soft Stone Coal, No. 2 .....	15.00 @ 15.25
Lake Superior Coke No. 1 .....	15.00 @ 15.25
Lake Superior Coke No. 2 .....	14.00 @ 14.25
Hanging Rock Charcoal, No. 1 .....	18.00 @ 19.00
Hanging Rock Charcoal, No. 2 .....	17.50 @ 18.00
Tennessee and Alabama Charcoal, No. 1 .....	15.00 @ 15.50
Tennessee and Alabama Charcoal, No. 2 .....	14.00 @ 14.50

### Forge.

Gray Forge .....	10.50 @ 10.75
Mottled Coke .....	10.50 @ 10.75

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel .....	16.75 @ 18.00
Lake Superior Car Wheel and Malleable .....	17.25 @ 17.50

## Boston.

Office of *The Iron Age*, 146 Franklin St., Boston, June 27, 1893.

The feature in the Iron trade this week has been the rumor, started late last week, that one or two of the heaviest building contractors and builders in the city, or the country even, were in financial difficulty. This was startling news to the principal Iron dealers and agents here of manufacturing concerns, and for a day or two there was next to nothing done but to inquire after credits and examine accounts. But later it turns out that each of the concerns mentioned is all right. It is certain that agents of the most prominent manufacturing concerns are willing to sell these contractors all the Iron they want, and that there has not been the least foundation for the rumored financial stress in regard to these contractors.

Indeed, it is well understood that the building concern the most doubted, by reason of the rumors, is meeting every obligation as fast as it matures and has been doing so right along. This feeling over, there has been a rather better inquiry for Iron within a couple of days, while prominent agents of union mills are not darning to book orders on building ma-

terials wanted immediately, so great is the fear of labor troubles to be commenced July 1.

**Pig Iron.**—The better orders for Pig-Iron noted a week ago have been only fairly followed out, while the conditions which brought about the orders are just as binding as when first announced. The fact of the matter is that several of the prominent Southern Iron furnaces are contemplating, individually, and without consulting their neighbors, a shutting down of production during the hot months, with a view of checking production, and ultimately benefiting the market. It comes from the authority of prominent dealers here that they are sure of some of their furnaces stopping, and that they have advised their customers to govern themselves accordingly. In the meantime the quotations on Southern Iron are very steady at: No. 1, \$15 @ \$15.50; No. 2, \$14 @ \$14.50; No. 3, \$13 @ \$14. These prices are for Iron ex-dock in Boston. There is still a very fair call for Virginia Iron, with the market steady at \$15.50 for No. 1, and at \$14.50 @ \$15 for No. 2. Pennsylvania Iron is only firmer here for the rumor that some of the furnaces are to shut down in order to strengthen the market. The quotations on Pennsylvania Iron, at shipping port, are at: No. 1, \$14.50 @ \$15; No. 2, \$13.50 @ \$14; Gray Forge, \$13 @ \$13.50. Spot lots would cost some \$2 ½ ton more. Western Irons are slightly firmer, from the report that some of the Western furnaces have actually gone out of blast. Ohio Irons are quoted at \$17.50 @ \$18.50 for Iron delivered in Boston.

**Bar Iron.**—There is reported a fair trade in Bar Iron out of store, though the market on large lots, from mill, has been somewhat affected by the financial rumors mentioned above. New England Bars are reported very steady, with the mills making Bars from old materials very busy. Quotations are at: New England Old Material Bars, 1.60¢ @ 1.65¢, from mill; from store, 1.65¢ @ 1.70¢; best Bars from Puddled Iron, 1.80¢ @ 1.90¢ from mill; from store, 1.95¢ @ 2 ¼¢. Norway and Swedish Bars and Shapes are quiet, with no new features in the trade. They are quoted at \$65 @ \$67 ½ ton from store here.

**Building Iron.**—Trade has been quiet in Building Iron for the reasons mentioned above. But within a day or two the feeling is better, and there is some looking about to place orders where they will not be hindered by any strike. The position of affairs makes the market firm, with quotations sustained at: Beams and Channels from mill, 1.90¢ @ 2¢; from store, 2.30¢ @ 2 ½¢; Tees, 2.20¢ @ 2.30¢ from mill; from store, 2.40¢ @ 2.65¢; Angles, 1.80¢ @ 2¢ from mill; from store, 2.25¢ @ 3 35¢.

**Steel, Steel Plates and Steel Rails.**—Some firmness is noted in the market on Steel, for the reason that prominent Steel manufacturers are under the bane of union men at their mills, and they are obliged to hold back on making certain contracts till after the wage question is settled. The market is quoted firm at: Bessemer Steel, 2¢ @ 2.10¢; Tire and Sleigh Shoe, 1.90¢ @ 2¢; Sheet, 2 ¼¢ @ 2 ½¢; American Cast, 6 ½¢ @ 7¢; English Cast, 13 ¾¢ @ 15¢; American Steel Rails, \$29, at mill. The Steel Rail market is quiet, so far as the New England roads are concerned, though agents mention some trade with Western roads, and claim that their mills are well ordered up on Rails. Steel Plates are quiet and some of the mills want orders, while others have a pretty good

showing of engagements. The market is easy at: Tank, 1.80¢ @ 1.90¢; Shell, 1.85¢ @ 1.95¢; R-fined, 2.05¢ @ 2.12½¢; Flange, 2.10¢ @ 2.12½¢; Fire Box, 2½¢ @ 2¾¢.

**Nails**.—Trade is said to be good for the season in Cut Nails. Prices are a shade easier, however, at \$1.40 per keg in carload lots and at \$1.45 @ \$1.50 in small lots; these prices for both Iron and Steel Cut Nails. Steel Wire Nails are quoted easier at \$1.60 @ \$1.70 to the trade here.

**Pipes and Tubes.**—There is only a fair trade in Pipe, with a dearth of orders just at this time, though there are still some water works orders that should be coming. The card rates are unchanged, but it is understood that some manufacturers are shading prices for the sake of trade. Boiler Tubes are dull, with the market quoted at: 3-inch and over, 67½% off from list; 2½ inch and under, 65% off.

**Scrap Iron.**—Scrap Iron does not improve either in request or values. There is a feeling that there is a good deal of Scrap Iron in the country, while the number of buyers is small. No. 1 Wrought is still quoted at 50¢ nominally, though some holders are above that price. Selected lots, including Old Horseshoes, are quotable at 55¢ @ 60¢, according to quality. Light Iron is dull at 33¢ @ 38¢, as to quality. Machine Shop Scrap is dull at 25¢ @ 30¢ for Cast and at 30¢ @ 35¢ for Wrought.

## Baltimore.

BALTIMORE, June 26, 1893.

While no new features have developed in the market in this section the favorable condition mentioned last week can be repeated. Plate of all kind is in demand; Tank Steel Plate, however, seems to be more generally called for, and there is quite a quantity of such work in the market. Collections still remain about the same, and complaints of non-payment of due accounts are not frequent.

**Bar Iron.**—Some fair-sized orders in Bar Iron have been placed during the last week, and this, with the probability of a possible shortage of supply, has lessened the possibility of consumers receiving concessions from prices quoted. We quote for mill shipment 1.70¢ @ 1.80¢ and from store 1.80¢ @ 1.90¢.

**Plates.**—As stated above, this class of material is in greater demand than any other, Tank work being especially brisk. A local concern has been awarded a nice contract for boilers for the Standard Oil Company against severe competition. The principal incident was the placing with a Baltimore house of material for ten boilers, which material is to go into Pennsylvania in the midst of very strong competition. We quote: Tank Steel, 1.80¢ @ 1.90¢; Shell, 2.10¢ @ 2.20¢; Flange 2.25¢ @ 2.40¢; Fire Box, 2.40¢ @ 2.50¢; Marine, 2.40¢ @ 2.50¢.

**Merchant Steel.**—This is the most discouraging part of our report, as the small demand noted last week seems to have dropped off entirely, and Shafting is the only class which is in demand at all. Our quotations are: Tire Steel, 2.10¢ @ 2.20¢; Spring, 2.40¢ @ 2.50¢; Toe Calk, 2.20¢ @ 2.35¢; Crucible Tool Steel, 6½¢ @ 7½¢, according to the brand.

**Boiler Tubes and Pipes.**—Some fair specifications have been placed during the last week, which suffices to

keep up the interest in Boiler Tubes. Pipe seems to have dropped off considerably. We continue to quote: Butt-Welded Black, 57½ and 10%; Butt-Welded Galvanized, 50 and 10%; Lap-Welded Black, 67½ and 10%; Lap-Welded Galvanized, 57½ and 10%; Ordinary Boiler Tubes, 2½-inch, 70%; Ordinary Boiler Tubes, 3-inch, 70 and 5%; Charcoal Iron Boiler Tubes, 3½-inch, 65%; Charcoal Iron Boiler Tubes, 3-inch, 67½%, dealers and consumers getting 5% better prices from stock.

## Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, June 27, 1893.

Viewed in every light the situation in the Iron and Steel trades could hardly be worse, and while from some quarters we have information that the money market is a little easier, from other sections it is claimed that it is getting worse. There is no disposition on the part of sellers to do business and make new contracts, while buyers are staying out of the market, and the natural result is, that the volume of business is lighter than ever before, with the prospects for the future far from encouraging. The impression prevails to some extent that as soon as a settlement of the wage scale is reached, there will be a more active market, as much of the uncertainty existing as to the future would thus be removed. As yet the conference committees representing the manufacturers and the Amalgamated Association have not come to an agreement, although some six or seven meetings have been held. It is not thought, however, that any serious trouble will occur, and a settlement brought about by mutual concessions is expected to be reached at an early date.

**Ferromanganese.**—There is no demand and 80% domestic may be quoted nominally at \$58, f.o.b. cars Pittsburgh.

**Plates.**—With the exception of a fair demand for Tank Steel, there is very little doing. Prices continue very low, and operations will be very much restricted among the mills in July for repairs and stock taking. The Carbon Steel Company of this city are making some extensive improvements that will increase their capacity about 50%. We repeat quotations of last week, as follows: Tank, 1.50¢ @ 1.60¢, according to order; Shell, 1.70¢ @ 1.80¢; Ordinary Fire Box, 2.25¢ @ 2.50¢; Special, 3¢ @ 3.50¢; Flange, 1.75¢ @ 2¢.

**Structural Material.**—Nothing is offering but small lots, and the demand will likely continue slow for some time. Prices do not show any improvement, and the situation as a whole is far from satisfactory. Prices continue to rule about as follows: Beams up to 15 inches, 1.55¢ @ 1.65¢, f.o.b. cars Pittsburgh. Angles and Universal Plates, 1.60¢ @ 1.70¢; Tees, 1.75¢ @ 1.85¢, and Z-Bars at 1.65¢ @ 1.70¢.

**Muck Bars.**—The coming shut down among the mills has restricted inquiries for Muck Bars, and there is very little doing. In the absence of sales we quote at \$23.50 @ \$23.75 for best grades, delivered at buyer's mill.

**Steel Rails.**—The market is lifeless. No new business of consequence has been placed for some time. We continue the quotation of \$29 at mill for standard sections.

**Bars.**—Mills here, and in the Mahoning Valley, are getting ready for the

annual shut down, and very little business is being done. The scale has not yet been arranged, but the impression is general that an agreement will be reached by compromise. From the Mahoning Valley comes the information that the mill owners there have made an agreement by which operations will be entirely suspended during July and August. The report is doubtless without foundation, as such action would only be too eagerly welcomed by non-union mills, and would, of course, result in union mills losing considerable business.

**Pipes and Tubes.**—A meeting of the Wrought Iron Pipe and Tube Manufacturers' Association was held in the Monongahela House, this city, on Wednesday, the 21st inst. Nothing but routine business was transacted, and no change was made in prices. It is stated that the Oil Well Supply Company will have ready for the creditors in a few days a statement showing their assets and liabilities, and the concern apprehend no trouble in securing an extension. There is only a fair demand going, confined principally to the smaller sizes. The discount list is almost entirely disregarded, very little attention being paid to it in actual transactions.

**Wire Nails.**—Within the last month Wire Nails have been sold by a concern in this vicinity on the basis of \$1.25, Pittsburgh, in round lots, which is the lowest price ever recorded in the history of the Wire-Nail trade. There is very little new business offering, and the few sales being made are for small lots only. We quote Wire Nails at \$1.35, Pittsburgh or Cleveland, in carload lots, but, as before stated, this price would doubtless be shaded for a desirable order, with terms of payment satisfactory to seller. Operations among Western Wire-Nail mills will be very much restricted during July, one or two concerns having already closed and will probably remain closed during the next month.

**Sheets.**—A general shut down among the mills will take place on June 30, but as to whether the shut down will be prolonged or not cannot be stated at this time. The Sheet scale has not been arranged, but it is the impression that an agreement will be reached shortly after July 1. Very little new business is offering, mills generally running on old contracts booked some time ago. Prices are without material change, and we quote as follows: No. 24, 2.50¢ @ 2.55¢; No. 26, 2.60¢ @ 2.65¢; and No. 27 at 2.70¢ @ 2.75¢. We quote Galvanized Best Bloom at 70 and 10% discount.

**Wire Rods.**—There is nothing doing, and we make the nominal quotation of \$28.50 at makers' mill in the absence of any recent sales. As is the case with the Wire and Wire Nail mills, the Rod mills generally throughout the West are expected to be idle during July.

**Wire.**—A general shut down among the mills of the West will take place on July 1, and the shut down will likely be prolonged through the entire month. Only a limited amount of new business is offering, confined to carload lots and less. Prices are unchanged, and we quote Four-Point Galvanized at \$2.30 @ \$2.40 and Painted at \$1.90 @ \$2 in carload lots at mill.

**Connellsville Coke.**—The Coke trade is in a very unsatisfactory condition and the outlook for an early improvement is discouraging. The demand for

Furnace Coke has fallen off largely within the last month or two, owing to restricted operations among the furnaces, and in addition to this, prices have declined considerably, caused by the efforts of smaller operators to dispose of their output for the balance of the year. It is reported that a serious disagreement has occurred among the larger Coke operators and that it may lead to serious complications, especially as regards prices. The report states that one of the larger operators has declined to further co-operate in the matter of sustaining prices, and will in the future pursue an independent course. For the week ending June 17, there were 11,954 ovens in the Connellsville region in blast and 5382 idle, with a total estimated production for the week of 113,677 tons. This was a decrease of 6172 tons compared with the production of the previous week. Connellsville Coke is now being freely offered at \$1.45 @ \$1.50, in tons of 2000 lb., f.o.b. cars in Connellsville region. It is also stated that prices on Foundry Coke are not being adhered to, and that it is being offered at prices equal to a decline of about 50¢ from prices ruling some time ago.

(By Telegraph, June 28, 12.30 p.m.)

In all probability, a settlement of the Iron scale will be reached before this week is out. The scale will doubtless be based on \$5 per ton for boiling, with some slight changes in the extras. The Ohio Falls Iron Works of New Albany, Ind., have signed the Iron scale. The concern have 15 single puddling furnaces, 4 heating furnaces, an 8 inch guide, a 16-inch bar and 18-inch muck train. This concern will be allowed the benefit of any concessions made when the scale has been finally adopted. A conference was held yesterday between Wire manufacturers and a committee from the Amalgamated Association, which resulted in a scale for Wire drawing for the year beginning July 1, 1893, and ending June 30, 1894, being adopted. The new scale shows a reduction on the present scale of about 6%. Only three firms in this country are governed by the Amalgamated Association scale, these being Salem Wire Nail Company, with mills at Salem, and Findlay, Ohio, Newcastle Wire Nail Company, Newcastle, Pa., and American Wire Nail Company at Anderson, Ind. By mutual agreement another meeting of the Conference Committee of the Sheet manufacturers and the Amalgamated Association will be held in the Times Building, Pittsburgh, tomorrow. There are good indications of a settlement being reached before this week is out. A meeting of manufacturers operating Tin Plate mills and a committee of their employees will be held at the same place on Friday at 10 o'clock a.m. It is expected that at this meeting a scale for Tin house labor will be adopted. For some days past rumors have been in circulation in Pittsburgh to the effect that some important changes among the officials of the Carnegie Steel Company, Limited, and superintendents of the various plants of that concern would

go into effect on July 1 next. These reports have gone as far as to involve the retirement of H. C. Frick as chairman. Up to this time Mr. Frick has not confirmed the report, and while some changes may be contemplated to go into effect on the above date the nature of these changes have not been made public.

**Pig Iron.**—The market is decidedly a waiting one, and as far as can be learned no business has been done during the past week beyond a few sales of Bessemer in lots of 100 to 300 tons. Gray Forge and Foundry Irons are almost entirely neglected, and it is not expected any business will be done until the wage scales have been settled. It is impossible to state just what prices are ruling on account of no sales being made. Under these conditions we repeat quotations of last week as follows:

Neutral Gray Forge....	\$12.00	@	\$12.25, cash.
All-Ore Mill.....	12.50	@	
No. 1 Foundry .....	13.60	@	13.85 "
No. 2 Foundry .....	12.60	@	12.85 "
Charcoal Foundry No. 1	17.00	@	18.00 "
Charcoal Foundry No. 2	16.50	@	17.00 "
Bessemer Pig.....	13.25	@	13.35 "

**Steel.**—Operations among the Steel plants will be largely restricted during July, on account of repairs and stock taking. At least two plants in the city will be closed during the greater part of the month, and several in the Wheeling district will be idle for longer or shorter periods. There is no business being done, both buyers and sellers waiting for some tangible developments as to the future. The market is nominally \$21.50 at maker's mill, with no sales reported during the week.

The Reading Trust Company, as signee of the Reading Iron Works, Reading, Pa., have filed their second account through George F. Baer. The amount received since the filing of the first report is \$63,896.78; amount disbursed, \$6904.89; leaving a balance of \$56,991.80 in the hands of the accountant.

## Cleveland.

CLEVELAND, OHIO, June 26, 1893

**Iron Ore.**—Production is being curtailed at a rate that suggests still another revision of the estimated output of the year. The Norrie's shut down, as prognosticated in *The Iron Age* last week, came before the close of the week. Following in its wake are a number of smaller mines, and more are announced to quit this week. Lake freights, too, are weakening, the Ashland rate having dropped to 90¢ and the Escanaba rate to 55¢ @ 60¢. The rush forward to the furnaces continues in advance of last season's record, about 40,000 tons having been sent down the past week, as compared with 21,000 tons for the same week last year. We hear of sales of Bessemers in small lots at \$3.75 per ton, Cleveland, and of non-Bessemers at \$2.80 @ \$3.10, but the market is almost lifeless. Speculation is now confined to the probable output of the year, which by some is placed as low as 3,000,000 tons.

**Pig Iron.**—Buyers and sellers are equally taciturn on the situation, each admitting that almost nothing is being done. Makers are certainly making slight if any effort at all to sell their

products. Prices for Bessemer are acknowledged to be a trifle less firm, and \$13.25 @ \$13.40 are now announced as Cleveland quotations, with one or two somewhat insignificant sales reported at \$13.25, Cleveland, July delivery. The settlement of the wage scale may precipitate some business, and dealers are awaiting the result with interest. Foundry Irons are weak, and only an occasional sale of an unimportant amount of Gray Forge is announced. The Western Pig Iron Associations would seem to indicate a favorable situation were it not for the fact that the demand is hardly perceptible. The prospect of a reduction in the cost of Coke leads some of the furnace men to the belief that an improvement in the tone of the market is not far away. Local quotations are:

Nos. 1 to 6 Lake Superior Charcoal.....	\$16.25
Nos. 1, 2 and 3 Bessemer, per ton.	\$13.25 @ 13.40
No. 1 Strong Foundry, per ton..	14.00
No. 2 Strong Foundry, per ton..	13.00
No. 1 American Scotch, per ton.	14.25
No. 2 American Scotch, per ton.	13.25
Mahoning and Shenango Valley Neutral Mill Irons, per ton.....	12.00
Mahoning and Shenango Valley Red Short Mills, per ton..	12.25

**Old Rails.**—But little is being done, although, as prices are low, something in the way of business is looked for soon. Old Americans are quoted at \$18 @ \$18.50 per ton and offerings are frequent and heavy.

**Scrap.**—No change in prices, and no business being done.

**Old Wheels.**—A few sales at \$14 per ton, Cleveland, are reported.

**Nails.**—Dealers quote Wire Nails at \$1.55 and Cut Nails at \$1.35 from stock, with a fair trade.

**Muck Bars.**—The demand is light. A sale or two at \$23.25 @ \$23.75 is reported.

(By Telegraph.)

The Iron Ore market continues very dull, more mines have closed operations and the demand is very light. There has been some inquiries for Non-Bessemer at \$2.80 @ \$3 per ton, Cleveland. The shipments to the furnaces are far in excess of last season's record. A sale of Non Bessemer Ore at \$3.70 per ton lower lake ports is reported ready, but the amount involved is less than 20,000 tons. The Pig Iron market seems a bit brighter, although the demand is slow. Bessemer Iron is quoted to-day \$13.20 @ \$13.40, while Gray Forge and Foundry Irons are weak.

## New York.

Office of *The Iron Age*, 98-102 Reade street, NEW YORK, June 28, 1893.

**Pig Iron.**—Dull business is still the conspicuous feature. Curtailment of output recently relieves the selling pressure in some degree, but there is evidently still more than enough Iron to go around, and, on other than particularly favored brands, prices are weak, with some business said to have been done in low grade foundry stock at less than our inside quotations. We quote Northern brands at \$14.50 @ \$15 for No. 1; \$13.75 @ \$14.50 for No. 2; \$12.25 @ \$12.50 for Gray Forge, at tide-water. Southern Iron, same delivery, \$13.75 @ \$14.50 for No. 1; \$12.50 @ \$13.50 for No. 2; \$12 @ \$12.25 for No. 3; \$12.25 @ \$12.50 for No. 2 Soft, and \$12.75 @ \$13.25 for No. 1 Soft. Gray Forge remains \$11.75 @ \$12.50.

**Spiegeleisen and Ferromanganese.**—The market remains exceedingly quiet, with foreign Ferromanganese quoted nominally at \$57 @ \$57.50.

**Steel Rails.**—Sales have been confined wholly to small lots. The demand continues very slow also. The quotation of \$29 f.c.b. mill for heavy sections is continued, but light sections are still offered relatively lower.

**Track Material.**—We quote: Spikes, 1.80¢ @ 1.90¢; Fish Plates 1.45¢ @ 1.60¢; Track Bolts, Square Nuts, 2.30¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered.

**Manufactured Iron and Steel.**—A number of moderate-sized orders for structural material have been placed, but low rates were invariably the rule. In other lines merely summer season business, almost invariably at previous lowest prices, is all that is reported. We quote: Beams up to 15-inch, 1.75¢ @ 2¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.80¢ @ 1.90¢; Tees, 1.90¢ @ 2¢; Channels, 1.85¢ @ 2¢, on dock. Steel Plates are 1.70¢ @ 1.90¢ for Tank; 1.95¢ @ 2.10¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.60¢ @ 1.9¢, on dock, and Common 1.50¢ @ 1.60¢; Soft Steel Bars are 1.50¢ @ 1.60¢; Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered; Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered; Cotton Ties, 80¢ @ 85¢ per bundle, at mill.

**Old Material.**—We quote Old Iron Rails at about \$15 @ \$15.50, Old Steel Rails, \$13 @ \$13.50; No. 1 Wrought Scrap Iron at \$15 @ \$15.50, and Car Wheels at \$11.50 @ \$12, with very little business passing.

## Metal Market.

**Pig Tin.**—The sharp decline in price of Silver, along with financial complications, has caused depression in the market, under the weight of which values dropped about ½¢ @ ½¢ per lb from the closing quotations at the date of last week's review. During the interval there has been considerable closing out of old speculative deals and some fresh ventures on the "short" side of the market, but speculative interest seems still to be confined almost wholly within the trade. Thus far this month about 3000 tons have arrived here, adding 1200 or 1300 tons to the previous accumulation and leaving sufficient supply for about five or six months' consumption that has escaped the McKinley duty. As matters stand at present the future of the market depends in a great measure upon the monetary situation and tariff legislation, but both of which, it is unnecessary to say, are extremely uncertain. Business has been done during the week at as low as 19.45¢ for spot and July delivery, and sales were difficult to make at that price at the close.

**Copper.**—Business has been on a very moderate scale and the market is at present in uncertain position, since home consumers are extremely indifferent buyers, and the export movement, while making a very good exhibit, insufficient to have any pronounced bearing. The popular quotation for Lake Superior Ingots is 10½¢, but some sales have been made at less, and there were faint signs that bids of 10½¢, prompt cash, would have found takers in some

quarters. Electrolytic sold at 10½¢ @ 10¾¢, according to brand and size of lot. On Casting Copper there has been a decline to 9½¢ @ 10¢, but the inside price seems to be exceptionally low at the moment.

**Pig Lead.**—Under the pressure of liberal offering of stock for delivery during the next 60 days, prices have undergone a further decline and the market is at present suffering in no uncertain way from the weight of financial stringency. Several hundred tons were sold early in the week at 3.52½¢ @ 3.55¢; subsequently several parcels went at from 3.50¢ down to 3.45¢, and rumor had it that the latter price was shaded in at least one instance. The official bullion price dropped to 3.40¢, the lowest point that has been touched in a long time.

**Spelter.**—Dullness is still the prominent feature in the market for this metal. Of other than single carloads the sales have been few and the demand is quite as spiritless at the present time as it was a week ago. Prices are rather weak, with the range of 4.15¢ @ 4.25¢ quoted for Prime Western delivered here.

**Antimony.**—The market has been very slow, but prices are held at about 9½¢ for Hallett's, 10½¢ @ 10¾¢ for L X, and 10¾¢ for Cookson's.

**Tin Plate.**—There is no change in the condition of the market; certainly none for the better as far as sales or demand are concerned. Aside from occasional lots of special sizes the purchases for future delivery are still extremely slim and spot goods are taken in very moderate quantities. Prices are rather weak all along the line but show no radical change. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., \$5.40; Bessemer full weight, \$5.35; light weights, \$5.02½ for 100 lb, \$4.90 for 95 lb, \$4.85 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60; Siemens Steel, IC basis, \$5.70; IX basis, \$6.85. Charcoals—Melyn grade, IC, \$6.40; Crosses, \$8; Allaway grade, IC, \$5.62½; Crosses, \$6.80; Grange grade, IC, \$5.70; Crosses, \$6.85. Charcoal Ternes—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.35 @ \$5.37½; do., 20 x 28, \$10.50 @ \$10.70; D. R. D. grade, 14 x 20, \$5.10; do., 20 x 28, \$10.30; Wasters—S. T. P. grade, 14 x 20, \$4.87½; do., 20 x 28, \$9.25; Abercane grade, 14 x 20, \$4.87½; do., 20 x 28, \$9.20.

## Coal Market.

The Anthracite sales agents at their meeting on Tuesday advanced the price of Coal in tidewater markets 15¢ on Egg and 20¢ on Stove and Chestnut. To the Western trade the advance was 25¢ on all sizes.

It is generally conceded that nine-tenths of the business done thus far in June has been at the May circular, which was from 10¢ to 25¢ per ton lower than the June circular. The producers held before consumers the fact that they were giving them Coal at a price less than that officially sanctioned, and thus stimulated a heavy buying movement which enabled the mines to produce at the rate of nearly 4,000,000 tons for the month. The policy for July is to be a repetition of that carried out during June. However, it is doubtful if it

will result in a free movement of Coal, for the reason that consumptive channels are now well stocked and will not be relieved to any great extent during the summer months.

The action of the sales agents in fixing the July output at 3,000,000 tons, against a production of about 4,000,000 for June, and of 3,654,000 for July, 1892, and 3,971,000 for July, 1891, clearly expresses the belief that restriction is regarded as necessary.

In the Bituminous trade about 75% of this season's contracts have been booked. The remaining 25%, the greater part of which is railroad tonnage, has been waiting for concessions in prices, which could only be made through a granting by the main line railroads from the mines to tide-water of a rebate in freights. It has always been the practice after the season is well opened to grant a rebate of from 10¢ to 25¢. This year these roads have repeatedly refused to take such action, and our information is that they will maintain this policy. If they hold out a month longer they will force the consuming railroads to accept producers' prices.

## Financial.

The money market has been the controlling factor in the financial situation during the week under review. Owing to continued shipments of currency to the West to relieve the business troubles, the hoarding of funds in commercial centers preparatory to July interest and dividend payments and the very heavy increases in loans have united in making money exceedingly tight. The highest rate of the week was 30%, the lowest 6%, the average 10 to 15%. The tight money market reflects the deplorable condition of affairs in the business world, and explains the steady liquidation which has taken place in securities. The immediate effect has been the lowering of sterling exchange. Bankers have drawn heavily upon their foreign connections. These bills have been freely offered and have had a tendency to lower the rate for money. As money went down exchange advanced. The result has been a widely fluctuating movement.

On Tuesday night money closed at 10% and exchange at \$4.83½. Inasmuch as sterling loans have been quite freely made in the form of bankers' bills, it is generally thought that an import movement of gold will be necessary to offset these. Just at the present time there is considerable talk of imports. The rate of exchange is sufficiently low to insure a profit on the transaction. The one deterring condition is the unsettled state of both the money and exchange markets, which is liable to change adversely to the importer while the gold is in transit.

The high money rates have practically put an end to legitimate buying of stocks and bonds. A great bulk of the stock transactions are always upon margins. The brokers who carry margin stock charge the customer 6%. When they are compelled to pay as high as 30% for the money, for which they receive 6%, it is safe to assume that they do not encourage transactions. All legitimate support being withdrawn, the market has been left to the mercy of the bears, and sagged throughout the week, rallying only from the lowest point on an easement in the money rates.

Another factor in the market has been the continuous selling of long stock by

people who require money for the conduct of their business, and who cannot obtain accommodations from the banks. These stocks and bonds, dumped upon a market which possessed no elasticity, could have but one effect, namely, that of depression.

The bond list is always regarded as reflecting the investment market. During the past nine days there has been a decline in 30 of the most active and better class of railroad bonds. This downward movement, coming on top of very pronounced declines of the weeks following the panic, is proof that large blocks of bonds have been sacrificed by investment holders. During the eight day period ending Tuesday, Atchison fours declined  $1\frac{1}{2}\%$ ; twos,  $2\frac{1}{2}\%$ ; Chesapeake & Ohio fives, 3; four and a halfs,  $2\frac{1}{2}\%$ ; Burlington Convertible fives,  $1\frac{1}{2}\%$ ; sevens,  $1\frac{1}{2}\%$ ; Canada Southern,  $1\frac{1}{2}\%$ ; Chicago Northern Pacific fives,  $1\frac{1}{2}\%$ ; Denver & Rio Grande fives,  $1\frac{1}{2}\%$ ; Erie twos,  $1\frac{1}{2}\%$ ; M. K. & T. fours,  $1\frac{1}{2}\%$ ; twos,  $2\frac{1}{2}\%$ ; Northern Pacific Consolidated fives, 2; New York, Chicago & St. Louis fours,  $1\frac{1}{2}\%$ ; Ontario & Western fives,  $1\frac{1}{2}\%$ ; Oregon Short Line Consolidated fives, 2; Oregon Improvement fives, 5; Pittsburgh & Western fours, 1; Reading fours,  $\frac{1}{2}\%$ ; ones, incomes,  $1\frac{1}{2}\%$ ; twos, incomes, 1; threes, incomes, 2; Rio Grande Western ones,  $2\frac{1}{2}\%$ ; Texas Pacific ones, 2; Toledo, St. Louis & Kansas City ones,  $\frac{1}{2}\%$ ; Union Pacific gold sixes, 3; Union Pacific, Denver & Gulf,  $6\frac{1}{2}\%$ ; Wabash twos,  $2\frac{1}{2}\%$ ; Wisconsin Central ones, 5.

The shipments of currency to the West, which have averaged about \$3,000,000 per week, are now about over. They would have been terminated on or about the 22d had it not been for the bank troubles in San Francisco and fresh business complications in New Orleans. A lot of \$300,000 went out on Tuesday, and it is believed that this will be the last. Already money has commenced to return to this center. Although in exceedingly small quantities, it shows tendencies which are expected soon to become a favorable factor.

The bank statement of last Saturday shows a most unhealthy condition of the Associated Banks of New York. The weak point is the comparative relation of loans to net deposits. But seldom has it been shown that loans have equaled or exceeded deposits. The statement showed loans of \$405,986,100 and deposits of \$398,064,100, the former item being \$7,922,000 in excess of the latter. A year ago it was \$43,257,700 less. Instead of decreasing as compared with deposits from week to week, the loans increased. Thus net deposits for the week ending Friday decreased \$8,472,300, while the loans decreased only \$4,714,300. It was this condition of affairs that prompted the Clearing House Association to issue Clearing House certificates against collateral which its members hold on loans. This action did much to re-establish confidence, and followed by similar action of other Clearing Houses, undoubtedly averted a panic in the business world, which would have been similar to the one which Wall street experienced in May.

A measure which has had a tendency to establish confidence, if not to relieve the situation, has been the action of the Treasury Department in anticipating the July interest on Government bonds. This is now being paid. A number of corporations, notably the New York Central, started on Wednesday to pay \$2,678,000 in interest and dividends which will not be due until July 1.

There has been no material improvement in the produce markets. There is some disposition to buy wheat for foreign export, although it has not yet reached the proportions promised last week.

The United States bond market has shown the effects of the liquidation. Following is given the range of bid prices since the first of the year, showing the highest, lowest and current quotations. It will be noted that the last are about equal to the lowest:

	Highest.	Lowest.	Current.
	May.	June.	rent
U. S. 4½s, 1891, extended..	99	98	98
U. S. 4s, 1897, registered..	113	109	109
U. S. 4s, 1897, coupon.....	112½	110	110
U. S. currency 6s.....	10½	102½	103

The depression of the market culminated on Tuesday. On Monday it was announced that the India mints had been closed. This was construed on the Stock Exchange to be a bear point, and stocks were sold very freely thereon. Maturer consideration of its probable effects have given rise to two opinions diametrically opposite. One is that India, having intimate relations with Europe, would suffer by any disturbance in her currency; that the United States would profit in the degree that India suffers; that radical action of this kind would hasten a repeal of the Sherman silver law. The other view is that one, if not the best, market for silver in the world, has been closed; consequently that the United States, being a heavier producer than consumer, will suffer through a depreciation in quotations; that this in turn will affect institutions dependent upon the silver industry, and will strain the credit of the United States along the lines where it has already been strained in keeping silver on a parity with gold. Another point is made, that inasmuch as the solution of the present financial disturbances is a repeal of the Sherman silver law, any factor which would have a tendency to delay such action would be bad. In this connection it is said that the silver men, seeing a part of their market cut off, will make strenuous efforts to retain the local market by seeking to keep the Sherman silver law in effect. On Tuesday the market rallied perceptibly on a more wholesome view of the silver situation, and the probabilities of gold imports. This caused a covering of shorts and a secession, for the moment, of liquidation for investment account.

Silver dropped to  $74\frac{1}{2}$  ounce Tuesday, the lowest point on record. At this rate the silver in a silver dollar is worth  $57\frac{1}{2}\%$ . The Director of the Mint expresses the opinion that the quotation will go to  $70\%$ .

Indications are that money will be much easier in a week. Stock and bond prices are abnormally low and there is a disposition to buy them at present figures, as soon as money rates work easier. There is also a large short interest in the market, the covering of which would considerably advance prices.

The International Navigation Company have been incorporated in New Jersey with a capital stock of \$15,000,000, divided into 150,000 shares of \$100 each. The incorporators are Clement A. Griscom, William A. Barnes, Alexander J. Cassatt, Henry H. Houston and Benjamin F. Brewster of New York; Joseph D. Potts of Philadelphia, and William J. Sewell of Camden, N. J.

Nicholas Snyder, a pioneer boiler maker of Pittsburgh, formerly of the

firm of Snyder & Carroll, died last week at his residence in that city, aged 75 years.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, June 28, 1893.

The movement in Pig Tin prices has been erratic and ultimately reached a lower plane, showing a decline for the week of about £6 on prompts and £3. 15/ on three months' futures. The depression was due chiefly to the decline in price of silver, but rumors that supplies for this market will be heavier later on had some effect, despite the fact that stocks on spot are under very close control. Outside speculative interest is extremely tame. On latest dealings the prices were £83. 10/ for prompts and £82 @ £82. 5/ for three months' futures.

Copper has ruled lower, Merchant Bars selling down to £43. 15/ for prompt delivery and £44. 2/6 for three months' futures. There were large purchases of warrants early in the week, due to rumors of the formation of the syndicate to control prices and reports of heavier buying by consumers, but later realizations, together with heavy sales for forward deliveries and financial pressure in America, caused weakness. Cash warrants, however, have been offered less freely than forwards. Nothing further has been heard regarding the syndicate. Closing prices were £43. 17/6 for Merchant Bar prompts, £44. 2/6 for futures and £48. 10/ for Best Selected English.

In Tin Plate the business has been of hesitating nature. Large buyers, as a rule, are awaiting developments, and dealings latterly have been chiefly in Oil sizes. Stocks at Swansea are estimated at 200,000 boxes. Black Sheets are in better demand and somewhat firmer. Prices for Tin Plate in the Liverpool market are as follows:

IC Charcoal, Alloway grade.....	13/3 @ 13/9
IC Bessemer Steel, Coke finish.....	12/0 @ 12/3
IC Siemens.....	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20.....	11/9 @ 12/
Charcoal Terne, Dean grade.....	11/9 @ 12/

Pig Lead market has remained quiet, but prices are steady at £9. 7/6 for Soft Spanish.

Spelter has been quiet, but prices are steadier at £17. 15/ for Ordinary Silesian.

Pig Iron warrants, after showing some advance, declined under the weight of general depression, Scotch selling at 41/7, Cleveland at 35/1½ and Hematite at 44/9, with slight reaction at the close. Makers' prices remain almost stationary. There is more inquiry for Old Material, and the market is firmer, without, however, any decided change in prices. There has been no decided change in the Steel trade.

A shipment of 28 tons of copper coins was recently made from Cardiff to the order of the Persian Government. The coins were minted in Birmingham, England.

# HARDWARE.

## Condition of Trade.

WITH THE CLOSE of the half year there is naturally a diminished volume of business, and, taken all in all, trade is quiet, orders being limited for the most part to small assortments of goods which are needed for early requirements. Many manufacturers are preparing for the dullness which generally prevails in July and are giving their attention to repairs and the finishing up of the six months' business. The financial situation has a good deal of influence with the larger buyers, and there is a marked indisposition on their part to make any large purchases, preferring to await developments rather than take advantage of the low prices which are prevailing in many lines. The stringency in the money market is being felt by wholesale houses and manufacturers, and it is observed that some strong concerns are not availing themselves of the usual cash discounts. At the present time more attention is being given to the scrutinizing of credits and the collection of accounts than to efforts for the sale of goods. In the matter of prices there is very little to report, the market continuing weak and in an unsatisfactory condition, but manufacturers are refraining from pushing goods upon their customers, thus preventing any material shrinkage in quotations. The volume of business during the half year has probably been nearly, if not quite, up to the average, the quiet which has prevailed during the past month or two being counterbalanced by the excellent trade with which the year opened. The indications are that July will be a quiet month, but it is hoped that with the removal of financial uncertainty and disquietude there will be a satisfactory resumption of business in good volume before long.

### Chicago.

(*By Telegraph.*)

Trade in Shelf Hardware is somewhat lighter now, as summer is here, and the demand for seasonable goods is about over, except for pick-up orders to supply the scattering trade. Vacations are beginning and salesmen are taking advantage of the approaching summer dullness to visit the World's

Fair. The demand for Builders' Hardware continues light, as was reported last week. Staple goods are comparatively quiet also. The trade in Heavy Hardware is very moderate for the time of the year, although some houses report a fair condition of business, greater in volume than they had reason to expect from existing conditions.

### St. Louis.

(*By Telegraph.*)

The principal feature in the Hardware market is the steady flow of small orders for a general assortment of Hardware. There is no large business anticipated at this time, as the holiday season is about here, and the large houses are making preparations to give their employees the usual vacation. Barb Wire and Wire Nails are weak and unsettled, and trade in these lines is light. The local car companies who buy largely in the Hardware line are not running full, and are practically out of the market. There is still considerable demand for Screen Wire, and price is quoted \$2 to \$2.25, according to the size of the order. Collections are excellent, when the general financial situation is considered.

## Notes on Prices.

**Cut Nails.**—There is only a moderate demand for Cut Nails, and prices are somewhat irregular. The quotation of \$1.05 for carload lots at mill represents the market in a general way, being shaded on desirable orders. Small lots from store in New York are held at \$1.30 to \$1.35.

*Chicago, by Telegraph.* — Manufacturers of Cut Steel Nails report an absence of large orders, but a steady influx of small orders, which keeps them moderately busy. There are no special developments in this line, but prices are held at \$1.20 to \$1.25, Chicago, on factory lots, and \$1.30 on small lots from stock.

**Wire Nails.**—There has been no important change in the Wire Nail market. The mills are preparing for the shutdown in July, which will be quite general, and in anticipation of this some of the trade are sending in orders covering their requirements for that month. The aggregate of this business is not referred to as especially large, a good many of the trade having sufficient stocks on hand. The quotation of \$1.35 for carload lots at mill still prevails and is maintained with a good deal of regularity, manufacturers refraining from making important concessions. The feasibility of reaching an understanding in

regard to prices and production is still under consideration by the manufacturers and it is thought that the present condition of things is favorable for the success of the project. There are, however, serious difficulties in the way and what the outcome will be is uncertain.

*Chicago, by Telegraph.*—The Wire-Nail trade is in a little better condition from the manufacturers' standpoint. Less pressure to sell is observable, and although prices have not been sustained at the figures named last week by sanguine sellers, a firm bottom appears to have been reached, and there is now a chance for a better condition of trade after the general shut down takes place the coming month. Quotations on factory range according to the mill, from \$1.40 to \$1.50, Chicago. Jobbers quote \$1.60 as their regular price from stock, with concessions to best buyers.

**Barb Wire.**—The Barb-Wire market continues sluggish, with the moderate volume of trade prices continue unchanged at \$2.45 to \$2.50 for Four-Point Galvanized in carload lots at mill.

*Chicago, by Telegraph.*—Orders are still coming in reasonably well for fair quantities from factory. World's Fair visitors are buying, also, to some extent. Local manufacturers have thus been favored recently with considerable Southwestern trade. Taking the whole volume of business, however, it is lighter than it was and seems to be tapering down to the usual midsummer dullness. Carload lots are quoted at \$2.15 for Painted and \$2.55 for Galvanized. Small lots are selling at \$2.30 and \$2.70, respectively.

**Tackle Blocks.**—The Tackle Block market continues in the demoralized condition which has prevailed for some time. It is conceded by manufacturers that the goods are selling below the cost of production, but the competition has been and continues very animated. The volume of business has been fair, but at present it is referred to as having fallen off considerably. The trade will realize how unsatisfactory the present condition is to the manufacturers when it is remembered that before the combination broke up prices were represented by a discount of 50 and 10 and 10 per cent., but that recently sales have been effected in some extreme cases at prices as low as discount 85 per cent., which represents a shrinkage in price to 15 cents as compared with 40 cents. This condition of things had doubtless something to do with the embarrassment of the Boston & Lockport Block Company, referred to in

another column, the effect of which on the market remains to be seen. It is thought not unlikely that it may have a tendency to diminish somewhat the prevailing competition and induce manufacturers to pursue a more conservative course.

**Economic Can.**—This article, description of which was given in our last issue, as put on the market by the Wilmot & Hobbs Mfg. Company, Bridgeport, Conn., and 20 Murray street, New York, is sold at \$12 per dozen, subject to a discount of 50 per cent.

**Padlocks.**—The following are the revised quotations of Slaymaker, Barry & Co., Lancaster, Pa., for whom John H. Graham & Co., 113 Chambers street, New York, are agents, on their varied line of Padlocks, terms, 30 days, or 2 per cent. discount for cash in 10 days:

	Per cent.
Nos. 1010, 1011, 1012, 1013 (Maroon Finished, Self-Locking, Scandinavian Padlocks).....	90&5
Nos. 21, 22, 23.....	80
Add 75 cents net per dozen to net of above for Nos. 21, 22, 23, with chains.	
Nos. 41, 42, 43.....	50
Add 75 cents net per dozen to net of above for Nos. 41, 42, 43, with chains.	
Nos. 61, 62, 63.....	60
Add 75 cents net per dozen to net of above for Nos. 61, 62, 63, with chains.	
Nos. 427, 1, 2, 3, 4 finishes.....	80
No. 1892.....	25
Nos. 724, 0724, 7240, 07240.....	35
No. 303.....	80
No. 612.....	35
No. 823.....	35
Nos. 109, 110, 111, 112 (Red, Key-Locking Scandinavian Padlocks).....	90&20
No. 926.....	20
Nos. 106 and 103.....	40
No. 506.....	75&10
Nos. 1480, 1482, 1483, 1484.....	35
Nos. 718, 719.....	35
Nos. 325, 326, 327.....	30

**Malleable Iron Trucks.**—Northwestern Malleable Iron Company, Milwaukee, Wis., are selling these Trucks, of which a description was given in a recent issue, at \$6 each.

**Mrs. Pott's Sad Irons**—Under date of June 12, Enterprise Mfg. Company, Philadelphia, withdraw the former net prices on Mrs. Pott's Cold-Handle Sad Irons, and announce the following in their stead:

No.	In lots of 25 doz. sets at one shipment.		In lots of 12 doz. sets at one shipment.		In lots of less than 12 dozen sets.	
	\$0.78	\$0.83	\$0.90	.78	.85	1.05
50, per set.....	\$0.78	\$0.83	\$0.90			
55, " " .....	.73	.78	.85			
60, " " .....	.90	.97	1.05			
65, " " .....	.82	.88	.95			
550 (Containing Nos. 82, 90 and Set No. 50 Irons) 2.35	2.50	2.75				
535 (Containing Nos. 87, 95 and Set No. 55 Irons) 2.20	2.35	2.60				

Handles in lots of 25 dozen are sold at \$1.30 per dozen; in lots of 12 dozen, \$1.40, and in lots of less than 12 dozen, \$1.55 per dozen.

**Little Giant Steel Truck**—This Truck was described in our last issue as put on the market by the Little Giant Truck Company, Syracuse, N. Y. The list price on their No. 1 Truck is \$24 per dozen, and on their No. 2 Truck \$30 per dozen, these prices being sub-

ject to a discount of 20 per cent. to the trade.

**Wild's Twine Cutter.**—A description of this article appeared in a recent issue of *The Iron Age*. The Twine Cutter is sold to the trade at \$5 per gross, subject to a discount of 2 per cent. for cash.

**Glass.**—This is a season of the year when little is being done in the way of distributing Glass from factories. It is too late for jobbers to place large orders, and too early to make contracts for fall delivery. The disposition is to purchase enough only to cover immediate wants, this policy being largely enforced by the scarcity of money. Most of the factories have shut down for the summer, and, it is understood, with comparatively small stocks of Glass on hand. The National Window Glass Company have succeeded in maintaining prices, apparently under the most adverse circumstances, as in all probability the backward spring and, later, the financial uncertainty would have demoralized prices completely, if the manufacturers and jobbers had not been held in check. As it is, the outlook for good prices and better trade in the fall is encouraging. Small dealers are replenishing their stocks from jobbers, day by day, so that the Glass handled in small quantities amounts to quite an aggregate. There are no encouraging features in the Plate Glass market, demand continuing limited. Jobbers do not appear to be overstocked, as a rule, but the factories have as much Glass as they can conveniently carry. Quoted prices remain unchanged, as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17½ cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7½ per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

### Export Notes.

**A** PROMINENT manufacturing and jobbing Hardware house in this city a few months ago received an order for about \$250 worth of merchandise, direct from a Brazilian importing house. Not being known to the sellers, their standing was cabled for through a bank doing business there and having a branch in New York. An answer was returned that it would be safe to execute any order up to \$20,000. The shipment was made, care being taken to observe the specific directions sent. In due course a second indent was received, which aggregated \$3000, largely for Builders' Hardware. While this may not be a common ex-

perience, the sooner manufacturers realize that small orders properly filled according to directions may lead to those of more importance the quicker their trade will increase. A small order requires the same care that a large one does, especially if it be a first transaction, as the initial mode of treatment it gets will be used in comparison with other sources of supply, which have been many years acquiring information and studying customs, &c.

The New South Wales Government proposes to grant an annual subsidy of \$50,000 to the Canadian Pacific Steamer Line between Sydney and Vancouver which has just been initiated. The Canadian Government has provisionally agreed to contribute \$125,000 a year, and it is hoped that the balance of the subsidy of \$250,000 will be made up by the British Government in the form of a subvention to the steamers of the company, which are capable of being classed as armed cruisers.

William E. Peck, 64 William street, New York, exporter of American merchandise, manufactured and other, is about to send a traveling representative to England in his interest. He has had a branch house in London for over a year.

Trade with West Coast Pacific ports in South America is very quiet. Exchange in Chili is now about 15½ pence sterling to the Chilian silver dollar, although it has been down to 13½ recently. During the worst of the revolution, we are told, it did not go below 15. There are orders on merchants' books in New York unexecuted waiting for an advance in the current rates or some prospect of better times. Trade is light all along the coast, importers only supplying their actual wants.

The Geo. F. Eberhard Company have opened an office at 64 William street, New York, where their interests in the East, as well as in Australasia, will be cared for. This branch is in charge of R. A. Thompson. Thos. Cooper, who has been closely identified with American Hardware in the Australian colonies, recently visited the World's Fair in this country for the purpose of seeing what was being done by American manufacturers. While here he connected himself with the Eberhard Company, and about June 1 returned home via Sydney. He will establish a branch of this company at Melbourne, and supervise the trade in the colonies of Victoria, South Australia and Tasmania, while the Sydney office will look after New South Wales, Queensland and New Zealand. The New York office has just issued a prospectus giving the names of the 91 American manufacturers they represent, stating briefly their position. In it they say they are not commission agents or brokers, but are paid a salary to originate and develop trade both in this country and abroad, not

caring to take orders, but rather to influence them toward the makers they represent, by showing samples, quoting prices and giving general information, preferring buyers should order direct or through New York resident buyers, or export or commission houses.

A letter recently received from Sydney, by a New York house, says the bank suspensions so far have not hurt trade to any extent, the public feeling that the banks were solvent, although unable to meet demands of English and colonial depositors. The demand for goods is fair, but with prospects of a very dull winter's trade. (It will be remembered their seasons are exactly the opposite of ours and their winter is now upon them.)

### Organization Among Retail Hardwaremen.

THE FACT that recently several associations more or less local in their character have been formed by Hardware merchants, together with advices we are in receipt of, that the necessity for such organizations is recognized, renders it apparent that this is a matter which is at present receiving more than usual attention. In many parts of the country the retail merchant finds his business to a greater or less extent interfered with in ways to which he has not as yet become reconciled. In many of the larger towns and cities department stores are monopolizing a considerable proportion of his trade; in other places jobbers and manufacturers are disposed to sell their goods to his customers; in very many villages and cities competition by merchants in the same line is so animated as to seriously diminish his profits, and in one way or another he feels the need of organization which would tend to correct these mischiefs and give to him the advantages that would result from concerted action.

While in general the desirability of such associations among those who are connected with the same business may be recognized, there are unquestionably difficulties in the way, and many merchants are disposed to shrink from participating in such movements on account of their lack of confidence in their success. There is, however, little doubt that there is a field for such organizations, and that the welfare of the trade in many places would be promoted by them if wisely formed and efficiently conducted. Those who are interested in this matter, and are contemplating the forming of societies, may be interested in knowing the methods pursued and the objects had in view by some associations already in operation, and we accordingly give below extracts from official documents explaining the purpose of two of these associations.

From the constitution and by-laws of the Massachusetts Hardware Dealers' Association we make the follow-

ing extract, which briefly explains its object:

The Massachusetts Hardware Dealers' Association is intended to include in its membership all responsible Hardware dealers, both wholesale and retail, throughout the New England States.

The trade have long recognized the necessity of an organization having for its objects the establishment of closer social and business relations, to guard against fraud and for the protection of honest dealers. These are the foundation principles of this association.

It is not intended to encourage any schemes of individuals or firms, but to consider and act upon all matters pertaining to the general welfare of the trade.

The Retail Hardware Dealers' Association, Titusville, Pa., enlarge upon the practices of which they complain, and explain with some fullness the plan upon which they are working:

*Resolved*, That the objects of the Retail Hardware Dealers' Association are many, but the most important is to try to bring about a better feeling among manufacturers, jobbers and dealers, and if possible to procure for consumers better and more perfect goods at the lowest possible prices.

*Resolved*, That the causes of complaint are substantially as follows: The treatment accorded us by manufacturers and jobbers, in that they permit their goods to get into the hands of persons not dealers at practically the same prices as those charged to dealers, thus denying reasonable protection to said dealers after selling them large lines of goods of their manufacture, and the overanxiety of our brethren to sell goods, resulting in unremunerative business. In view of these facts, be it further

*Resolved*, That we demand of manufacturers and jobbers that they confine the sales of their wares to regular dealers, and that each and every member of this association pledges himself to use all reasonable efforts to enforce this rule, to the extent of refusing to buy or handle the goods of any manufacturer or jobber who sells to persons other than regular dealers.

*Resolved*, That if any manufacturer or jobber furnish goods to any one not regularly engaged in the retail trade, the dealers affected shall report the same to the secretary, with affidavits or other proper proofs. The secretary shall then correspond with the offending manufacturer or jobber, and endeavor to adjust the matter amicably, and in the event of failure to so adjust a complaint where the evidence is conclusive the secretary shall report the facts in the case to the members of the association.

*Resolved*, That it is unbusiness-like for one dealer to offer special inducements to make sales in the territory of another dealer, and that in no case should a dealer furnish goods controlled by another dealer in a neighboring territory, to be used in competition with that dealer's trade.

*Resolved*, That the practice of competitors in the same town, in trying to get from one another lines of goods that legitimately belong to the other, is to be condemned and discontinued by this association.

*Resolved*, That a cordial invitation is hereby extended to all regular and legitimate retail dealers to join with us in this association for mutual benefit, and that they forthwith send to the secretary the amount of dues for one year and receive their certificate of membership and a copy of the constitution and by-laws of this association.

The above extracts, which explain the scope of societies which are already

in existence, may be suggestive to some of our readers, from whom we shall be pleased also to receive any information on the subject or the results of their experience or observations. The matter is one deserving the best attention of the trade.

### An Arrangement for Nails.

E. R. SMITH, Pennville, Pa., has favored us with a sketch of Nail counter and bins, from which the accompanying cut, Fig. 782, has been made. The counter corresponds with others in the store in appearance, but has a hopper formed of boards slanting to the center near the

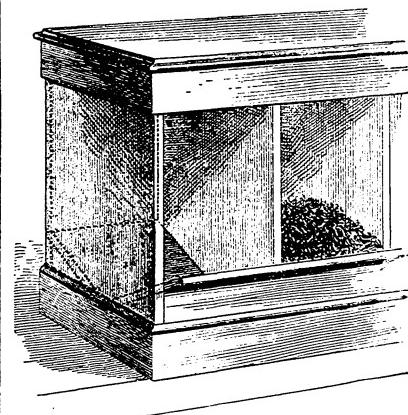


Fig. 782.—An Arrangement for Nails.

floor. The board on the open side of the bins projects about 4 inches to admit of putting the scoop under when raking out Nails. Partitions are fitted in to form the several compartments, which are made large enough to hold from one to two kegs of Nails each.

### Boston & Lockport Block Company.

THE TRADE will learn with regret that the Boston & Lockport Block Company, Lockport, N. Y., and Boston, Mass., have been overtaken by financial embarrassment, owing principally to the stringency in the money market. Myron H. Tarbox of Lockport and Henry B. Newhall of 105 Chambers street, New York, have been appointed receivers, with authority to continue the business.

The factories at Lockport and Boston will, accordingly, be continued in operation, there having been a shut down of but half a day in each of them. The liabilities of the company are estimated at \$200,000, and it is thought that the assets are sufficient in amount to pay off the creditors. The unsatisfactory condition of the market in general, and of the Block market in particular, has unquestionably had its influence in compelling the company to go into the hands of receivers. It is hoped, however, that the embarrassment will be temporary.

### Arrangement of Stores.

WEED & CO., Buffalo, N. Y., are proprietors of the "Old Hardware Store," established in 1818, to which the accompanying illustrations relate. Although the business is old in years, the store is modern in arrangement, as the fact is recognized that well-displayed goods are more easily sold, and that the lines bearing the best profit are the ones to push to the front. The store is a double one, having shelving on each side of the partition and also against each side wall, the two rooms being connected by passageways, one of which is shown in Fig. 783. This represents the front of the middle or partition shelving, the opening in front extending to the store front.

The shelving extends to the ceiling, and is filled with sampled wooden boxes to a considerable height. Above these stock is kept in original packages, the whole being reached by a traveling ladder. This shelving is devoted to Tape Measures and Carpenters' and Mechanics' Tools. The boxes are finished in natural wood, each with a drawer pull; and in addition to the samples, in the case of Tapes, the kind and length are stenciled on each box.

A showcase devoted to Pocket Cutlery runs around the front of the partition, and the shelving is arranged in the same manner on the other side. The goods sampled here are Cork Screws, Drawer Pulls, Conductors' Punches, Jack Chain, House Numbers, Ice Picks, Wire Picture Cord, Screw Hooks and Eyes, Butts, Casters, Match Safes, Lemon Squeezers and miscellaneous goods of this character. On the end of the partition Thermometers, Bird Cage Hooks, Key Chains,

On the side of the store opposite the shelving in Fig. 783, is a wall case extending back about half the depth of the store. A portion of this case is shown in

showcase immediately in front of it contains smaller Planes and fine Tools. Duplicate stock of Saws is kept in the original boxes underneath the case.

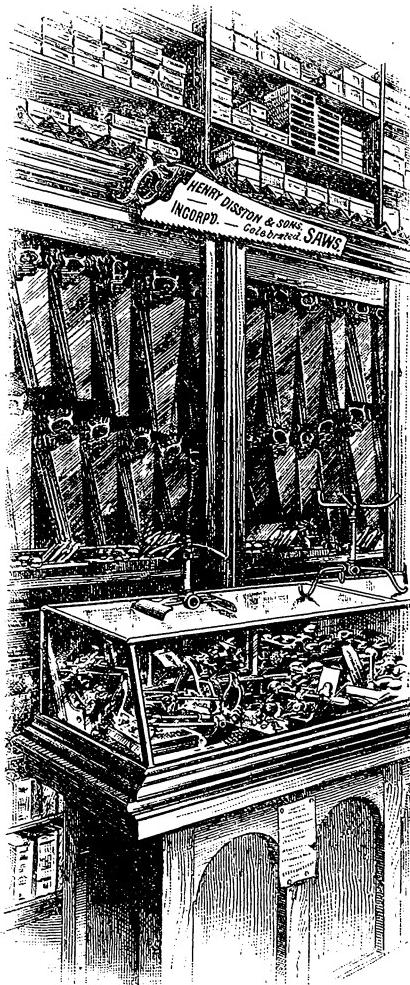


Fig. 784.—Saw Case and Tools.

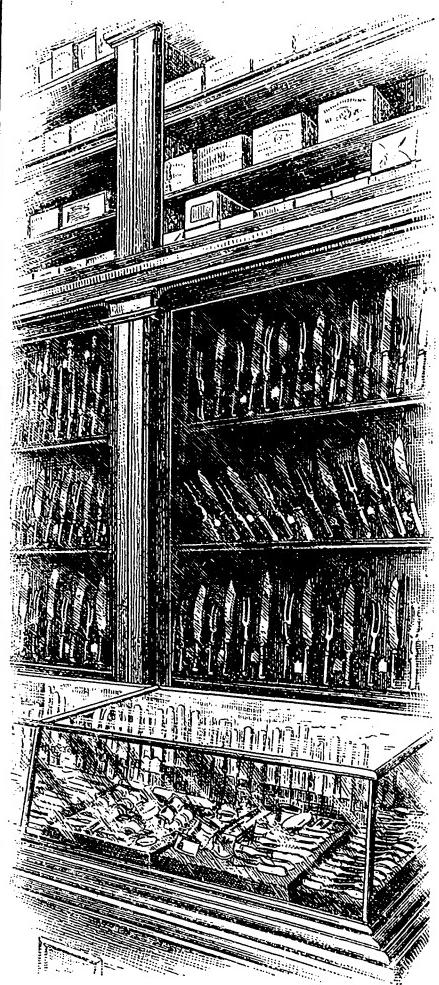


Fig. 785.—Cutlery Cases.

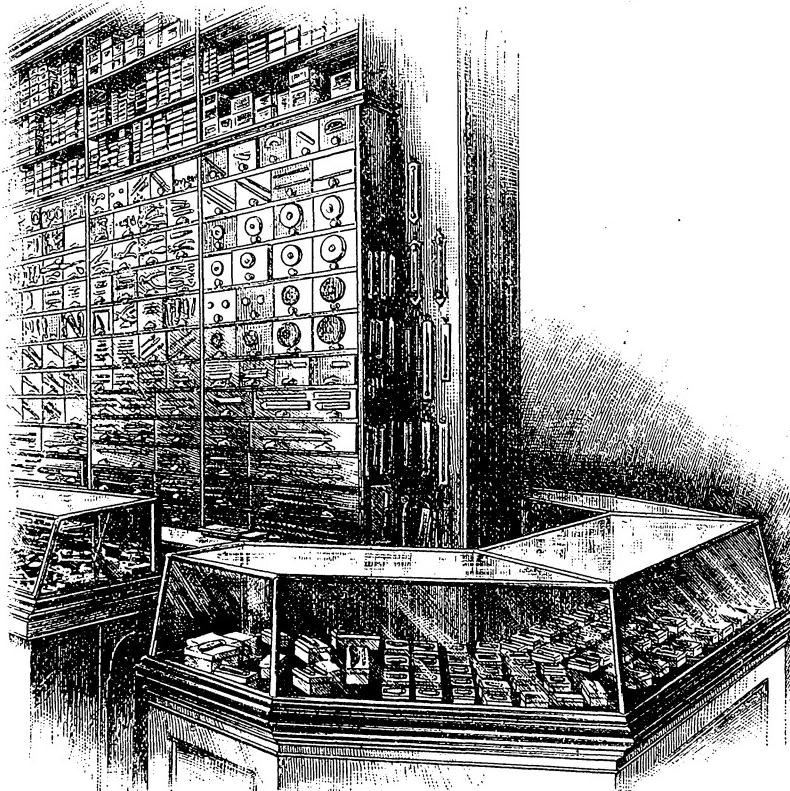


Fig. 783.—Center Shelving and Case.

Bird Cages, &c., are sampled. Counters and showcases are in front of the shelving on each side of the partition.

Fig. 784. This is devoted to Hard, Meat and Back Saws, Hammers, Hatchets, Planes, Plumb and Levels, &c. The

arrangement of Carvers is shown in Fig. 785, the case being against the wall in the other part of the store. This method of arrangement allows of four lines of shelving, two in each room, with a corresponding number of counters. The shelving all extends to the ceiling, and each line is provided with a traveling ladder. A system of cash carriers is also provided for each line of shelving.

The glass doors in front of the Saw and Cutlery cases are hung on weights, and push up out of the way. The boards on which the Carvers, Steels, &c., are sampled slant from the front at the bottom of the case, to the back at the top. The showcase in front contains Silver-Plated Knives, Forks and Spoons; with samples of Fancy Handled Table Knives against the back, held in an upright position by a band attached to the back of the case.

A handsomely fitted up room in another part of the store is devoted to samples of builders' fine Hardware. Drawers or slides with fronts but no sides, finished in natural wood, contain samples of long Escutcheons and Knobs, Butts, BellPushes, &c.; while on the ledge over the drawers stand mounted Locks and Knobs. If the line of goods on any particular drawer is to be shown, the drawer is taken out and stood up against the ledge, the bottom resting on a lower slide drawn partly out for that purpose. On the opposite side of the room is a wide counter.

The arrangement for each line of goods throughout the stock has received the same care and attention as those already referred to.

## Correspondence.

### LOCAL CHECKS.

**W**E ARE IN RECEIPT, from a prominent Southern house, of the following reply to the letter which appeared in our last issue in regard to payment of bills by checks on local banks:

"The Gentleman in Virginia" has entirely overlooked and ignored the strongest point in the article of "Western Banker," and that is the system of petty robbery that the method of paying with local checks entails on the jobber. It is nothing more or less than robbery to pay \$4.75 for a \$5 debt, and this is the way the jobber looks at it. It certainly is not right, just or honest that country merchants should expect or ask that their checks on local banks be taken at their face value, when it costs never less than 25 cents and often more to collect them. Jobbers should unite in a determined stand and should take concerted action in regard to this growing abuse. As a jobber, I thank "Western Banker" for his well-timed, sensible and interesting letter.

### A LONG-SUFFERING JOBBER.

### CHICAGO—ANTWERP.

(From Our Special Belgian Correspondent.)

To the Editor: This year all who can spare an affair of \$500 and have the time to do it are already on the way, or are thinking about getting ready for a trip to see the World's Fair. This will give foreign dealers a good opportunity of making a further acquaintance with America's manufactures, and of comparing them with those of other countries, and the results will doubtless be a much further demand for the former. Things American will be the rage, and office, household and store, to be in anyway up to date, must have something American to give it a tone.

The Chicago show will be a good missionary, and those firms who do not leave an order with the manufacturers they see when in the States, will come back with a plentiful supply of catalogues, and will no doubt be forced to send their order later on when they see that others are selling the goods.

Chicago will be the thin end of the wedge.

Notwithstanding the great attractions of the World's Fair, however, there is no doubt that the great majority of dealers who could, and perhaps do already, handle American goods will not see the exposition. Many do not care to entail the expense that this would stand them in, and many more cannot spare a month away from their business; so America must, in the interest of her export trade, drive in the wedge—*i.e.*, find out some way to show what she can do to other countries who cannot come and see her "at home," and must make use of the expositions of other countries to educate the world in her interest.

I have in a former letter described the great progress American Hardware has made on the Continent in general, and in that country I am called on to reside, in Belgium in particular, and have called Belgium the "Gate of the Continent," and still consider that, notwithstanding its small size as a European State, it is one of the most important positions to be captured by the American commercial army. I do not mean to say that other countries should be neglected, but in commercial, as in other warfare, it is advisable at times to concentrate one's forces on a given point in order to capture a position. As I have before stated, Belgium is well disposed to America's exports, and there is already here a great demand for these lines.

In Belgium anything that is not Belgian is good and will sell. The people who make the most money here are those who deal in the manufactures of other countries.

In England there is just now a certain amount of jealousy about things American and the American "Ambassador of Commerce" is looked on with a certain amount of suspicion; here, on the contrary, he is received with open arms.

In England, it is true, there is no customs duty and this makes business very easy, but here the customs duty does not amount to much, 10 per cent. being the extreme limit, and on many goods, as machinery, for example, the duty is not worth figuring, as it only amounts to about 40 cents per 100 pounds. In conversation with a leading importer here of American Sewing Machines a few days since, I was told that the cost of freight and duty on big lots, came to about 36 cents per machine, including all charges from New York to Brussels.

I think I have said enough to show that Belgium is worth powder and shot, not on account of its importance and size, but as a way in and as a means of getting there.

Now for the moral: 1894 follows 1893 and Antwerp follows Chicago. An important exposition will be held at Antwerp in 1894, and it is my opinion that America must not get left about this, but must secure a good position there, as this will be a good opportunity of showing to those who have never been to America what she can do, above all as the Antwerp exposition will be visited by business men from all countries, and there will be a constant influx of visitors from all neighboring States.

Those firms that decide to show here should now commence, and if possible should send over a good representative who is well posted in at least French and German, and they should prepare a good supply of catalogues and general printed matter in the French language, not forgetting to put the prices in francs and the metric measures.

In 1895 there will be also an exposition in Brussels, and it is thought that the great majority of firms that show at Antwerp will show also at Brussels

the following year, as this can be done with a very little extra expense, and this will practically be a two years' position.

### Sales to Consumers.

**O**N THIS SUBJECT, which was discussed at some length in a recent issue, we have several letters from the trade, in which they refer to the growing tendency on the part of jobbers and manufacturers to dispose of their goods to consumers, whom retailers naturally regard as their legitimate customers. Some of our correspondents also make suggestions with reference to a remedy, most of them, however, being content to enter their protest against the practice without suggestion as to how it may be diminished or terminated.

One of our subscribers writing from a town in Pennsylvania refers to the matter in the following terms :

I have carefully read what your subscribers say about manufacturers and jobbers selling to consumers. I have been in the trade since 1858 and have noticed the retail trade changing from the local or home stores to the manufacturers and jobbers. The main cause is, I think, because the trade is not protected by license. The retail store has a series of taxes at each and every place of business they locate; the manufacturer and jobber pay only one license to sell to any one all over the United States and they send out their peddlers under the name of commercial travelers, who canvass closely the consumers' trade. They might as well take a knapsack or horse and wagon and deliver their goods. If this canvassing business was put under proper restrictions, there would not be so much trouble to hold trade. In our town nearly everything is peddled from door to door, groceries, dry goods, medicines, Hardware, tinware, woodware, wines, &c., under the name of wholesale.

A merchant in Illinois refers to the extent of the practice, alluding particularly to the jobbers as troublesome competitors of the retailers:

We are glad to see the matter of manufacturers and jobbers selling to consumers brought up. It is something that all retail Hardwaremen are interested in, and we believe much more of it is done than they are aware of. We know that jobbers from other cities come here and sell to consumers, making them prices nearly as low as those at which the regular merchant can buy. Take, for instance, Wire Cloth. Jobbers come here and see all the manufacturers of Screen Doors, and quote prices on Wire Cloth, Spring Hinges, &c., as low as we can buy of the jobber here, and we suppose the jobbers from here go to other places and do the same. It is all wrong, but we can see no way to stop it.

A merchant in Wisconsin refers to his policy of not dealing with houses that thus interfere with his trade :

I have had some trouble in this direction, and I believe that any jobber or manufacturer who follows this practice hurts himself and does the retailer a great injustice. It is my policy not to deal with any house that follows up this line of business, and I would like to see all of my fellow retailers do the same.

Several other correspondents refer to the matter in a similar vein, and sug-

gest that there ought to be concerted action among retailers looking in this direction.

### Trade Items.

**J.** A. HENCKELS of Solingen and Berlin, Germany, is distributing among the trade in this country, through his agents, Graef & Schmidt, 29 Warren street, an exhaustive catalogue, printed in German, of Cutlery manufactured by this house. The book contains 400 pages, 11 x 8 inches, profusely illustrated, showing the staple lines, among which may be mentioned Pocket and Table Cutlery, Shears, Scissors, Surgical Instruments, Manicure Goods, Swords, Daggers, Bowie Knives, Razors, &c., as well as many staple and odd patterns of Nut Cracks, Nut Picks, Cork-screws, Mincers, Cleavers, Box Openers, Shoe and Cigar Knives, Erasers, Paper Cutters, Farriers' Knives, Pruning and Brush Shears, &c. The work shows evidence of careful preparation, and is so arranged that goods may be ordered without risk of misunderstanding.

IN THEIR ADVERTISEMENT in this issue the Detroit Dynamo Company, Detroit, Mich., call attention to their King Dynamos for electroplating, electrolyzing, copper refining and arc and incandescent lighting. They are also putting on the market Fan Ventilating and Power Motors and mention the fact that they are dealers in Electro-platers' Supplies.

ONE OF THE HORNS OF ALICE, the rhinoceros at Central Park, New York, recently cracked, and a plaster of paris cast of the horn having been taken, a protecting cap of brass was made from it and securely fastened on the horn. The brass cap weighed twenty pounds, and was made by the Fred. J. Meyers Mfg. Company, Covington, Ky., for whom F. J. Mattison is agent, 69 Beekman street, New York.

IN THE ILLUSTRATED DESCRIPTION of the Economic Can, made by the Wilmot & Hobbs Mfg. Company, 20 Murray street, New York, in our issue of June 22, the material of which it is made was, by a typographical error, referred to as Swedish Steel, instead of "Swedoh" Steel. The latter is a special brand of the manufacturers, in the quality of which they take special pride as to toughness, smooth finish and durability.

### World's Fair Exhibits.

**D.** R. SPERRY & CO., Batavia, Ill., issue an engraved card calling attention to their exhibit in the northwest part of the Manufactures Building, Section G, Block 4, and enumerate their manufactures, including Cauldrons, Steam Jacket Kettles, Vacuum Pans, Sugar Kettles, Hollow Ware, Farm Boilers, Laundry Stoves, Drug Mortars, Amalgam Retorts and miscellaneous goods.

THE WILCOX & HOWE Co., Birmingham, Conn., are located in Section B, gallery of the Transportation Building. Wm. Howe is in charge of the exhibit, which consists of one forging of each article the company manufacture in the line of Carriage Hardware. Bicycle and other special forgings are also exhibited, these forgings being now made a specialty, as an adjunct to their regular Carriage Hardware business.

ROUSE, HAZARD & Co., Peoria, Ill., have an exhibit in the gallery of the Transportation Building comprising a number of their Sylph, Overland and Rudge patterns of machines. Their

space is embellished by quite a valuable assortment of photographs of cycling celebrities, especially of manufacturers and jobbers well known to the trade, there being also photographs of the starts and finishes in celebrated races, &c. A characteristic of the display is that the draperies are held in place by, and many of the decorations are comprised wholly of Bicycle parts, such as chains, pedals, wheels, &c. In the exhibit is shown what we are advised is the first rear chain driven Safety ever made. Another feature of the display consists of two large representations of the company's trademark, which has been reproduced in the shape of *bona fide* wheels with pneumatic tires 4 feet in diameter. These trade-marks are very conspicuous, either from the main aisle on the ground floor below or from the main aisle in the gallery.

**J. R. TORREY RAZOR COMPANY**, Worcester, Mass., utilize a showcase in making their exhibit. The showcase is an elegant one, made of quartered oak. About 800 Razors are shown in the case. Some of the Razors are arranged in two pillars, 2 feet 6 inches in height, surmounted in the center by an arch, 2 feet 6 inches high. The striking feature of the exhibit is a large Razor in the center of the case, the blade of which is 28 inches long, 4 inches wide and 1 inch thick at the back. This Razor was designed and made under the personal supervision of the president of the company. In the left-hand corner of the case are exact *fac-similes* of the first Razors made in Sheffield, England, in the seventeenth century. There are a number of Razors in odd and old-fashioned designs, which may be said to involve the history of the Razor trade from the Middle Ages to the present time. Among the fancy Razors shown is one with the back and tang of the blade in the form of a snake, eyes and fangs being prominently shown. Another fancy Razor represents a tiger with open mouth grasping the blade of the Razor. The exhibit is a fine one, and much care and labor were expended by the company in preparing it.

**A. B. FARQUHAR COMPANY**, York, Pa., exhibit in Agricultural Implement Annex, 74 E. Separator Thresher, Low-Down Vibrator Thresher, Mexican Thresher, Mexican Thresher Engine, Walking Cultivators, Riding or Sulky Cultivators, with Double-Row Corn Planter and Fertilizer Attachment; Single-Row Corn Planters, Grain Drills, Corn Shellers, Spring-Tooth Harrow, Trucks and a full line of Plows. In the Machinery Department, Section 14, Column F-33, is displayed a 100 horse-power Automatic Corliss Engine, 25 horse-power Center Crank Engine, mounted on locomotive boiler on wheels; complete Saw Mill, with variable friction feed; and 5 horse-power Vertical Engine and Boiler.

**E. T. BARNUM**, Detroit, Mich., has an exhibit which is located in the Manufactures Building in the extreme northwestern corner, on space designated as Section H, Block 3, No. 11, and which consists of a Wire house occupying a space 10 x 15 feet, 17 feet high. In the walls of this house are found numerous samples of Wire work, such as are used for railings in offices, all carefully and firmly fitted together, making a very attractive piece of work. The front of the house consists of samples of the brass work used in connection with banks, and exhibits the different finishes in use in the leading banks of the country. The interior contains a large assortment of Lawn Fencing, Lawn Furniture, Stable Fittings, Jail Cells, &c. The entire exhibit is finished in pure white, relieved with gold.

### The Profit of the Hardware Business.

BY WM. H. MAHER.

**I**N THESE DAYS there is no branch of business in which competition is not sharp and aggressive, but in some lines of trade it is much more severe than in others.

For instance, the average man supposes because he is a consumer of groceries, that no special experience is required in buying and selling groceries over a counter. Hence men start in that business without experience and with little capital. How little is evidenced by an incident coming to my knowledge within a few days, where application was made by a man and his wife for credit for a stock of groceries. It developed that they had \$50 in cash and no experience in business, but considered themselves well equipped for starting a small grocery. They were advised to wait awhile until their capital was larger, but the chances are that they found a salesman who proposed to have that \$50 and the trade of this pair of merchants.

Every man believes that he can weigh out and do up sugar, draw molasses and vinegar as well as any other man. The consequence is that men start a grocery and cut prices to draw trade, fail, and are succeeded by other ambitious and equally ignorant men.

The dry goods trade is constantly recruited from its own ranks, usually from men who have been heads of departments. They have been permitted to buy their own goods, and, to a very large extent, have also had influence in making prices at which the goods shall sell, and are firmly convinced that they know the dry-goods business from A to Z.

The general expenses of running a store are a mystery to them. The acquaintances they have made in the way of business they look upon as personal, and their trade a tribute to their own popularity. They impress their acquaintances with their supposed popularity and ability, and induce their friends to help them into a store of their own.

Finding that the people who formerly traded at their counter do not follow them, they are obliged to offer inducements by cutting prices, and there is so much of this that the dry goods business of the country has become one of small profits, and to be successful must be backed by ample capital and command large sales.

The drug business is one that demands long apprenticeship, if the owner of the store would be independent of his clerks. The druggist must be a chemist to make his prescription business profitable, yet his worst competition is from druggists who are without experience, and who depend upon clerks for all the technical knowledge needed in the business.

Aside from this, what was formerly the most profitable part of the drug business, patent medicines and proprietary articles, are to-day made leaders and baits in department stores, and they will probably continue to be so used, for extensive advertising creates a demand for them, and the regular prices are so well known that a

cut price is at once understood by the public.

The Hardware business is not one that attracts the majority of young men. It is not of itself a stepping stone into "society." It offers no inducements to the dudish young man who thinks more of his clothes than of his brains. It does not attract the superficial man who is more exercised about the wages he receives today than the position he will have a few years from this.

Competition in the Hardware trade is rather one of brains and ability than one where men simply expect success by underselling each other.

There is no special rush of men into the Hardware trade in any given locality. When a man who has been a Hardware clerk prepares to start in business for himself, he has learned that capital is necessary and that business is not created in a day.

The young man who is about to select a business should consider his own tastes and adaptability, the position any given trade occupies as a money-maker, and the means it offers of gaining the acquaintance and good-will of his fellow men.

He will see that a very large percentage of the customers of a dry goods merchant or grocer is composed of women and children. The hardwareman deals as largely with men. His principal trade is with farmers, builders, mechanics and manufacturers. These are the men who make a village or city. These are the men whose personal acquaintance is of value in business and helpful in social and political life.

When one compares the stable character of a stock of Hardware with the unending changes of fashion in a dry goods store, or the great loss from perishable goods in the grocery store, the business commends itself because of this. Ninety-five per cent. of the stock in a Hardware store is as salable to-day as it was a year ago, and will be just as merchantable a year hence.

The expenses of running a Hardware store are, proportionately to the business done, much less than in other lines. The store needs not to be located on a principal street, clerks are not required to wait upon shoppers, for a Hardware store does not tempt that class; and customers, being mostly men, generally carry their purchases away with them.

The Hardware business is pre-eminently a business for men. It is a manual training school for an intelligent boy or young man. The salesman who would be successful in selling Tools and Machines must know how, when and where they are used. He must be able to take apart and assemble any machine, tool or weapon that he sells and educate purchasers to do this. This will be conceded by any one who has knowledge of the business, and, being conceded, it is one very strong reason why the Hardware trade is not sought by the mass of men who are looking after easy places.

To the young man who is seeking a field that will pay him best in money profits, as well as bring him into intercourse with the best men in his community, it can be said, with the confidence

born of both observation and experience, that the Hardware business offers the most hopeful outlook and the greatest measure of success.

## The Bear's Tail and Wire Nails.

BY THEODORE.

"Yes," said Joe Blackburn (the truthful Joe), "that was about the funniest experience I ever had on the road."

"'Nuther ghost story?" questioned one of the crowd in rather a disgusted way.

"No, siree; this occurred; this did!"

"Well! that is remarkable," said the questioner with pretended astonishment; "actually going to tell the truth. Well! the profession is going to the dogs sure nuff."

"I tell you this is all straight," said Joe.

"All right; go on."

"Well, I was traveling for a Hardware firm, trying to introduce a new line of goods into New England, and was meeting, of course, with immense success ——"

"Oh, of course!" came the sarcastic chorus from the crowd.

"With immense success, as I was saying," he continued not minding their chaff. "Well, it so happened, that in working through Maine I had to call at a small town, which was not much out of my way, in order to see an old fellow from whom we bought our axe handles. There was no trade in the place—regular woods, you know—and I did not expect to stay more than a few hours at the most, especially as it was in the middle of winter, and with no decent hotel in the place. I found the old fellow's place all right—queer old shop—and after we had settled the business on hand I started to go, intending to catch the one afternoon train; but he stopped me and invited me to stay overnight and join with him in a bear hunt on the morrow. Of course I stopped, for if there is one thing that I like more than another (and there is), it is skating across the snow, hot on the trail for bears. I ——"

One of the party interrupted: "Sure, it was not a cow or chipmunk, or something of that kind you were after?"

"It was bear, straight bear; suppose you will say next that I never saw one."

"Well, the next morning we started out with a rifle and an old breech-loader. We were not an hour's distance from the town when we struck a fresh trail, which must have been made that morning, as it had snowed lightly during the night. We kept on for about an hour longer, following the trail, which led us to a steep cliff, and we had a slippery time climbing up. The old man was carrying the rifle and he also had the shot for the breech-loader which I carried. We

had just reached the top when by some mishap he slipped and down went the rifle and shot to the bottom of the cliff into a deep brook. Almost at the same moment we spied bruin making for us. There was no time to lose, so I drew the old breech-loader to my shoulder and fired. The shot missed, and on came the bear.

"There is no more shot. We'd better run," shouted the old man.

"Suddenly I bethought myself I had plenty of powder and in my pocket was a package of our justly celebrated Wire Nails. I hastily loaded the gun with them, and as the bear was passing a large tree I took aim and fired. The bear came to a sudden stop; but he did not seem hurt, and I prepared to load up again, when the old man burst out laughing.

"Confound it," he said. "Blamed if his tail ain't nailed to the tree."

"I looked, and was astonished to see the bear tugging away endeavoring to free himself. The Nails had struck him as he was passing the tree and his tail was firmly nailed to the bark. Well, we went up and dispatched him with a knife; but it took us nearly an hour to extract the Nails, and I have them yet, which proves the truth of my ——"

"Joe," interrupted one of the crowd. "Joe, did you ever read the story about George Washington and the cherry tree?"

"Yes."

"Well, read it again."

## Manufacturing.

**B**RUCE & MARKS MFG. COMPANY, Gas City, Ind., are now in full operation. They are putting on the market a line of Agricultural Tools, to the excellent quality of which they refer. In connection with the economic production of these goods they call attention to the fact that their plant is located in the heart of the natural gas district, so that fuel costs them nothing.

**T**H E WARDER, BUSHNELL & GLESSNER COMPANY, Springfield, Ohio, are now adding to their plant a new foundry, 600 x 80 feet, which will be equipped with electric power and with the most approved appliances for producing first-class work. The company advise us that trade with them has steadily increased and that they find it necessary thus to enlarge their facilities to supply the demand for their Champion Harvesting Machines.

**N**ORWICH BELT MFG. COMPANY. Norwich, Conn., have, during the present year, added to their business the manufacture of Rawhide Lace Leather. In this department they advise us that they have met with much success, selling large quantities of the Leather, principally through the Western and Southern States.

**T**HE ESSEX, N. Y., HORSE NAIL COMPANY have reduced the number of directors from nine to seven, and elected the following to membership on the board: D. F. Payne, A. J. B. Ross, W. D. Palmer, P. H. Boyle, C. W. Woodford, F. S. Atwell, P. H. Baldwin. At a subsequent meeting officers were elected as follows: D. F. Payne, president and treasurer; C. W. Woodford, vice-president; P. H. Boyle, secretary.

THE JACOB J. VOLLRATH MFG. COMPANY of Sheboygan, Wis., have just installed a full line of machinery for the manufacture of Steel and Sheet Iron Ware, and are making an extensive line of enameled cooking utensils. This class of goods will be made in connection with the Hollow Ware which they have been making for many years past and necessitates an enlargement of their force.

THE CATTARAUGUS, N. Y., CUTLERY COMPANY of Little Valley have voted to increase their capital stock from \$50,000 to \$100,000, and they will, in the near future, enlarge their plant considerably on account of a great increase in business.

CHARLES P. PARISH & Co., whose large upholstery Hardware factory is now on Pacific avenue, Chicago, have begun to take down their machinery and are making extensive preparations for moving into their new factory at Chicago Heights, which will be completed and ready for occupancy July 1.

THE COLDWELL LAWN MOWER COMPANY, Newburgh, N. Y., have recently finished a Lawn Mower 50 inches wide for use on a large polo and lawn tennis ground near Boston. This is referred to as the largest Mower ever made. The Mower was completed eight days after the order was received, although special patterns were made and part of the material had to be made and shipped from Ohio, and another lot from Massachusetts.

THEO. HIERTZ & SON, St. Louis, Mo., manufacturers of the well-known Non-pareil Anti-Friction Metal, advise us that their trade during the past three months has been the largest in the history of their business. This metal is particularly adapted for high-speed engines, and where heavy crushing weight is met they claim it gives universal satisfaction.

P. J. CONROY & Co. of Paschall, Philadelphia, manufacturers of Refrigerator fittings, have added to their line a Refrigerator and Cooler Faucet, and a Refrigerator Door Fastener, especially suitable for large doors.

HAINES & ZIMMERMANN of 407 Cherry street, Philadelphia, manufacturers of Hardware specialties, were visited by fire on the 21st inst., and the contents of their machine shop damaged to the extent of about \$900.

GERMANTOWN TOOL WORKS, 518 Commerce street, Philadelphia, issue a circular to the trade in which they state that the report that they had gone, or were going, out of business is erroneous and without foundation. On the contrary, they say that increased business last year has compelled them to make a number of improvements in their machinery and additions to their plant, and are now, they claim, in a position to furnish the trade with a complete line of Hammers and Edge Tools with a promptness which has not heretofore been the case.

THE BRADDOCK WIRE WORKS at Rankin, Pa., shut down indefinitely on Saturday evening, June 24. Over 700 men are thrown out of employment.

WIRE GOODS COMPANY, Worcester, Mass., report a large business in Bicycle Spokes, of which they make a specialty. These are made to order, of any grade of wire, and of the various shapes and sizes required by the makers of the different wheels.

WM. A. SHULL of Philadelphia, manufacturer of Razor Straps, last week shipped some large orders to Auckland, New Zealand, and Delagoa Bay, South Africa. His export shipments for the present year have been, we are advised, exceptionally large.

## Prize Competitions

**\$25.00.**

As announced in previous issues the following competitions are now before our readers and remain open until the dates named:

### Prize Competition No. 26.

SUBJECT :

#### To What Extent Are Manufacturers and Jobbers Justified in Selling to Consumers.

This competition is suggested by the fact that frequent complaints are made that manufacturers and jobbers interfere with the retailer's business by selling to his customers. It is intended to draw out the views of the trade on the subject. In discussing the question the following points may, perhaps, naturally be touched upon:

- The annoyance and injury to which the retailer is thus subjected;
- What the rights and privileges of the manufacturers and jobbers are in this matter;
- What it is feasible for retailers to do for their own protection.

This competition will remain open until July 1, 1893.

### Prize Competition No. 27.

SUBJECT :

#### Local Associations of Merchants.

It has been found feasible to form associations in many places for the purpose of securing more friendly relations among competitors and reaching an understanding in regard to matters of common interest. Among the good results referred to as coming from such associations are the following: Overcoming petty jealousies; cultivating a spirit of fraternity; listing of undesirable customers; an understanding in regard to time of presenting bills; putting in operation early-closing movements; agreement as to the prices at which goods are to be sold; mutual accommodation in supplying goods which one merchant may be temporarily short of, &c. The subject is thus evidently a broad one and of a good deal of practical interest. In discussing it the following points are suggested:

Whether it is desirable to have such associations;

How such associations may be organized;

The objects to be accomplished by them.

It will also be of interest to have any information in regard to the practical working of such associations.

This competition will remain open until July 8, 1893.

The following prizes will be awarded in each competition:

First prize.....	\$12.50
Second prize.....	7.50
Third prize.....	5.00

The prizes will be awarded for answers which, in the judgment of the Committee of Award, are most suitable for publication and of the most general interest.

We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These com-

petitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than the dates on which the competitions close. They should be addressed as follows:

DAVID WILLIAMS,  
96-102 Reade street,  
New York.

#### Prize Competition No. —.

The committee to whom the contributions in Prize Competition No. 16 were referred have awarded the prizes as follows:

First Prize to FRED. MACEY, Grand Rapids, Mich.

Second Prize to M. W. CARLETON, Cleveland, Ohio.

Third Prize to H. A. MCKEE, Bellefonte, Pa.

## Price-Lists, Circulars, &c.

JOHN B. HARKER & CO., 19 Fifth street, South, Minneapolis, Minn., state that the suit instituted against them 16 months since for the infringement of a patent on a Waffle Iron has been decided in their favor. The decision was a most decided refutation of the claim made against them, and they are now free to push the manufacture and sale of the Harker Waffle Iron.

A. I. ROOT, Medina, Ohio : Bees and Honey. This, the seventy-eighth edition of illustrated catalogue and price-list, shows, with descriptions, Implements for bee culture in large variety; also a line of miscellaneous articles.

A. B. KOCH COMPANY, Peoria, Ill.: Circulars descriptive of the Koch Patent Shiftable Reversible Shelf Brackets. These circulars illustrate the methods in which these Brackets can be used in putting up shelving. They are so contrived that the Brackets can easily be shifted to suit goods of different heights. The shelves can readily be removed from one store to another, not being "fixtures" in the ordinary sense.

OSSAWAN MILLS COMPANY, Norwich, Conn.: Twisted, Braided and Woven Goods, in silk, worsted, cotton and wire. Their illustrated catalogue, which is the first showing a complete line of their Cords, Wires and other manufactured goods, states that with machinery the manufacturers are able to make a great variety of Twisted, Braided and Woven Goods on special orders. In addition to the above-named articles, cuts are given of Picture Hooks, Screw Eyes, Screw Hooks, &c.

BOSTON EMERY WHEEL COMPANY, Waltham and Boston, Mass.: Emery and Corundum Wheels from North Carolina, Georgia and Chester Corundum; also Emery Wheel Machinery, Polishing Lathes, Strapping Machines and Automatic Knife Grinders. Special mention is made of the Ferro-Silicon and of the Boston Flexible Wheels.

WATERBURY MFG. COMPANY, Waterbury, Conn.: Brass and Nickel Harness Trimmings. The catalogue illustrates, with prices, Glass and Metal Rosettes, Spots, Nails, Terrets, Hooks and other miscellaneous Trimmings for the Harness and Saddlery trade. The book is handsomely printed on fine-quality paper, bound in flexible leather covers.

THE KILBOURNE & JACOBS MFG. COMPANY, Columbus, Ohio : Trucks. The catalogue devoted to this line of goods illustrates and describes, with prices, Baggage Barrows and Express Wagons, Store, Warehouse, Railroad, Hotel, Dry Goods, Carpet, Barrel and Wagon Trucks, Grain or Meat Wagons, Hand Carts, Skids, Push Cars, &c.

DETROIT STAMP COMPANY, Detroit, Mich.: Rubber Stamps. Their catalogue of 96 pages illustrates Stencils, Seals, Steel Stamps, Burning Brands, Checks, Badges, Type and Office Specialties, &c.

KEEN BROS. HARDWARE COMPANY, Chicago, Ill.: Mechanics' Tools. Illustrations are given of Carving Tools, Chisels, Spokeshaves, Drawing Knives, Hatchets, Planes, Rules, Levels, Screw Drivers, Hammers, Saws, Braces, Dividers, Pincers, Pliers, Plasterers' and Paper-Hangers' Tools, &c.

### It Is Reported—

That Murer & Case's Hardware store, Norfolk, Neb., was burglarized recently, the articles taken being valued at \$200.

That W. D. Ball, who has been closely identified with the business interests of Ludlow, Vt., for the past 25 years, has disposed of his Hardware store to Frank Howard of Springfield, Mass., and Henry Brown of Ludlow. They will continue the business at the former stand.

That G. W. Hiser, Lexington, Ill., has built an addition to his Hardware store, which will be used as a tinshop.

That the Hardware store of G. H. Blaker, Maumee, Ohio, was burglarized on the 19th inst.

That D. P. Noyes' Hardware store at Henniker, N. H., was recently burned out.

That the store of Wylie Bros., Elizabeth, Pa., was entered by robbers on the 20th inst., and about \$100 worth of Hardware carried away.

That the wholesale Hardware firm of Logan, Gregg & Co., Pittsburgh, suffered slight damage by fire on the 20th inst. Spontaneous combustion is the supposed cause of the fire.

### Paints and Colors.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

Trade has been rather slow in nearly all departments, and the inaction that frequently figures with some prominence during the summer season stands out now as the feature of the past week. While not all that could be desired as far as out-turn of goods is concerned, the market has had some few features that are at least interesting if not suggestive. Prominent among these is a drop in the price of Pig Lead to the lowest point that has been reached in many years and consequent inclination to believe that, in view of this fact, to say nothing of the aggressive tendencies of some corrodors not identified with the National combine, the latter interest will reduce their figures for the leading pigment. Secondary, is the enhanced cost of Quicksilver, which, if maintained, is likely to affect Vermilion. Next to that come signs of stiffening of prices for Paris Green on the strength of good seasonal demand and reduction in stocks of several manufacturers.

However, the fact remains that nothing has occurred to stimulate buying and that general financial conditions hold business in check to greater or less extent.

*White Lead.*—The market is in somewhat uncertain condition. Reports have had circulation to the effect that the National Lead Company have carried their "special" prices beyond the territory where outside competition was supposed to be the most irritating, and, in fact, that the old official list has been more frequently deviated from than adhered to during the past ten days, directly or indirectly. That Western and New England "outside" corrodors are competing sharply at about  $\frac{1}{2}\%$  under the "official" list is the fact, and it is an open secret that more jobbers than one are selling 25-lb pails at prices remarkably close to the official list rate for lots of 5 tons. The award for lighthouse supplies was also interesting, the bid for Lead in Oil made by a Western firm, including 25-lb pails at 6¢ and 12½-lb pails at 6½¢, having been accepted. The lowest price for kegs, lots of 12 tons, on the combine list is 6½¢. Quick process and mixed Leads are selling at very irregular prices.

*Red Lead and Litharge.*—Foreign Red Lead has been offered rather more freely and some few good-sized lots, to arrive, were sold at  $\frac{1}{4}\%$  @  $\frac{3}{4}\%$  under the prices that have stood as popular quotations. The domestic product is slow of sale and prices are irregular. Litharge is meeting with slow sales at present, and, while not quoted lower, prices lean more or less in buyers' favor.

*Orange Mineral.*—French continues scarce and is held firmly at  $10\frac{1}{4}\%$  @ 11¢. There is only a moderate demand for German for prompt delivery, which is met at  $7\frac{1}{2}\%$  @ 8¢, as to quantity. On invoice lots for shipment  $7\frac{1}{4}\%$  is quoted. Domestic brands are unchanged, with fair trade for this season of the year at  $8\frac{1}{2}\%$  @  $8\frac{3}{4}\%$ , as to quantity, less the usual discount.

*Zincs.*—The market has been a slow one and rather soft. Cheaper crude material and request for delay in the shipment of Oxide on old contracts are the most striking features. Old quotations continue in force, but there is frequently a margin between "quotations" and actual selling prices. Imported Zincs are moving out fairly in small quantities and agents' prices remain unchanged.

*Colors.*—Dry Colors have undergone no radical change. There is firmer tone to the market for Quicksilver Vermilion and Paris Green, but no change in list prices. Otherwise the situation is wholly unchanged, and business is merely fair for the season.

*Miscellaneous.*—There have been no new developments in the market for Chalk, Whiting, Barytes, Terra Alba or other Clays. Business rather slow the past week.

### Oils and Turpentine.

Dullness has been the conspicuous feature of the market for Animal and Vegetable Oils. In the few instances where something more than commonplace trades have been worked through, special inducement in the shape of low price was almost invariably the incentive. In other words, it is a buyers' market in a great measure, since there is no local speculative animation, hardly any export interest and nothing but strictly perfunctory buying for home trade distribution and consumption. The outlook for the immediate future is not indicative of any radical changes, but against, rather than encouraging to, movements in the upward direction.

*Linseed Oil.*—Aside from a repetition of last week's report there is nothing

to go on record. The Seed situation, or, at least, what can be seen of it, is the subject of more or less comment, in which variety of opinion is conspicuous; but on business in Oil the reports are remarkably uniform, indicating as they do a merely ordinary turnover of stock at practically unchanged prices. The popular quotation on Raw Oil is 50¢, and on outside lots 48¢ seems to be the lowest.

*Cotton-Seed Oils.*—Small volume of business and rather lower level of prices is the record for the past week. The speculative interest have indulged in some attempt at making a market, but assistance from other quarters failed to materialize, and the attempts fell flat. Prices fell also, the latest being about 37¢ @ 38¢ for prime quality crude Oil, 42¢ @ 43¢ for prime Summer Yellow, 48¢ @ 50¢ for Butter quality and 50¢ for prime White.

*Lard Oil.*—City pressers, as a rule, still quote 75¢ for prime quality Oil, and receivers of out-of-town brands do likewise. They have sold very small lots at that price, however, and it is intimated that a few orders were taken at less for delivery two or three weeks ago. Upon the whole, the market presents a soft appearance and is unmistakably slow.

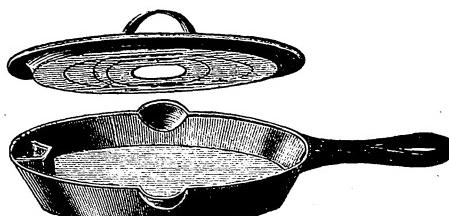
*Fish Oils.*—The reports from the Menhaden fishing are toned so as to create the impression that the catch continues poor and the output of Oil small. This is characteristic of the Menhaden combine, however, and the proper amount of allowance to make is in doubt. There is hardly any demand and market value is problematical. Sperm, Whale and Cod Oils have undergone no change.

*Miscellaneous.*—Ceylon Cocoanut Oil has been sold at  $5\frac{1}{2}\%$  @  $5\frac{3}{4}\%$ , on the spot, according to size of lot and terms of payment, and at  $5\frac{1}{4}\%$  @  $5\frac{3}{4}\%$  for autumn shipment from primary source of supply. Cochin is dull and unchanged. Common Olive Oil is without change in price and finds rather slow sale. There has been no change in Red Oils or in Neatsfoot Oil.

*Spirits Turpentine.*—The movement in prices has been very narrow and the market is bare of distinctly new feature. Deliveries have been somewhat in excess of the receipts, but not enough to affect values. Late business was at  $29\frac{1}{2}\%$  for regular and 30¢ for machine barrels.

### Smokeless Frying Pan.

W. E. Beveridge, Baltimore, Md., has secured a patent for, and intends placing on the market, what he describes as the Smokeless frying pan, a general view of which is shown in the accompanying illustration. The pan is made with a lip at both sides, and provided with a close-fitting cover. An important feature is the opening in the lid and in the body of the pan itself, which is claimed to create a draft that



Smokeless Frying Pan.

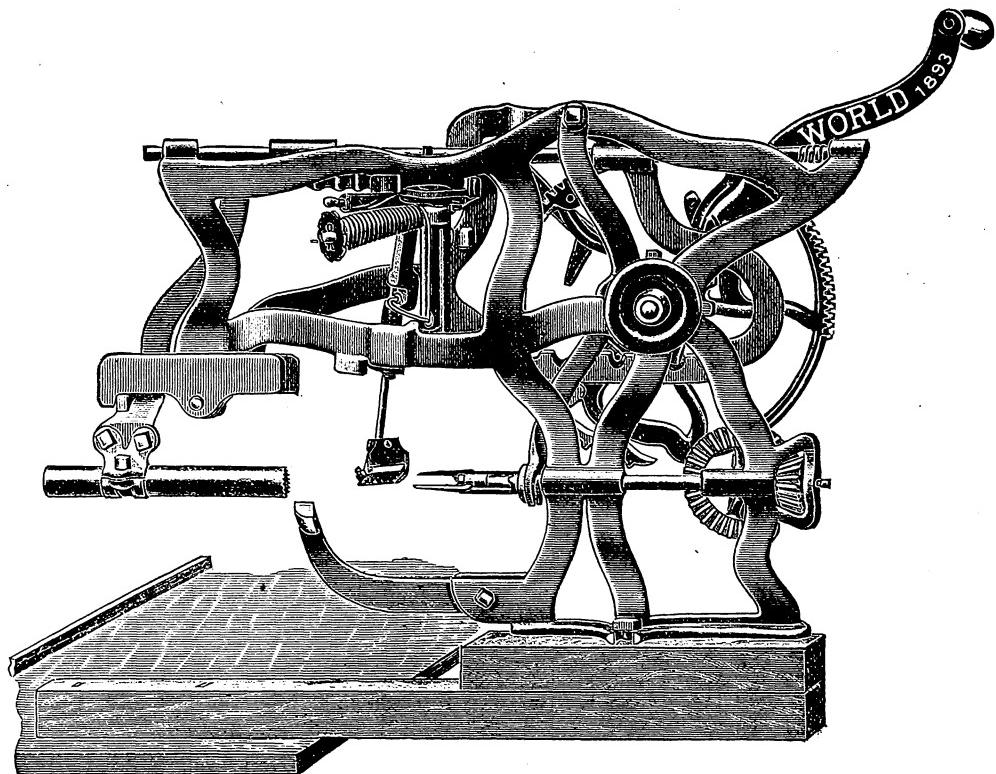
serves to carry away all unpleasant odor which may result from cooking, and prevent its finding its way into the house. The pan is being made in three sizes.

### The World Apple Parer.

C. M. Heffron, Rochester, N. Y., is the manufacturer of the new apple parer represented in the accompanying illustration. Attention is called to the simplicity of the design and the few parts. An effort has been made to adapt the operation of the machine to the

apart or to wear out on the edges. The head piece is made of heavy webbing with brackets and pulleys on the sides, through which the cord passes from the basket to the check hook or hames of the harness, Fig. 2. The point is made that this attachment retains the basket in a natural position for the horse to eat from, and enables him to eat all the grain without any liability of throwing

and to take orders for sheet metal punching. They are turning out large quantities of Bicycle Bells and Locks, which they claim to be able to manufacture to advantage both in design and price, and as the articles have especial features to attract the attention of the trade, there is no doubt that they will meet a large demand. The new firm starts out under favorable conditions, the partners being



*The World Apple Parer.*

most natural movement of the hands. The parer is referred to as a one-turn machine, requiring but one turn of the crank to pare an apple. It is claimed that expert operators can run this machine without stopping, slackening down the speed to about one-half while putting the apple on the fork.

### Williams' Ventilated Folding Feed Basket.

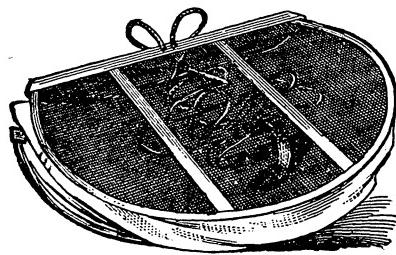
The accompanying cuts represent a feed basket being introduced by E. J. Hussey & Co., 80 John street, New York. The basket is described as being strongly and attractively made of extra

it out by throwing up his head. It is stated that when not in use the basket may be folded up, making a neat flat parcel, which occupies little space and which may be carried between the cushion and seat of a vehicle without becoming damaged and without inconvenience to the rider; that because of the form and construction of the basket

practical young men with plenty of experience in their line.

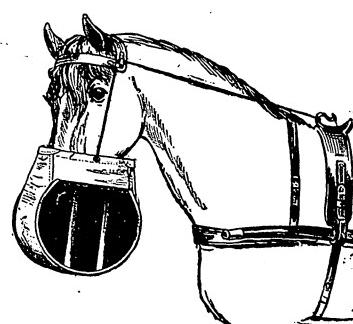
### Improved Glue-Can Top.

Russia Cement Company, Gloucester, Mass., and 95 Reade street, New York, are now packing Le Page's liquid glue and the various sizings made by them into tin cans having an improved top, as shown herewith. The improvement consists in the neck of the can being of tinned malleable iron with the cam sections cast on it, instead of tin with wire soldered on for cam sections. The wire points which project inside the cap require but a quarter turn to



*Fig. 1.—Williams' Ventilated Feed Basket Folded.*

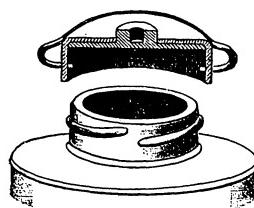
heavy duck with woven wire galvanized sides, stayed with galvanized iron and bound with heavy tin, crimped over galvanized wire, which is fastened to the duck to make it impossible to pull it



*Fig. 2.—Basket in Use.*

ventilation is afforded, allowing a horse to breathe with as much freedom as when in a stall; that it remains sweet and clean; that it will not fill the mouth of the horse with dust, and that it will not heat his head.

HAINES & ZIMMERMANN, 407 Cherry street, Philadelphia, have commenced business as manufacturers of Hardware specialties and patented metal novelties of all kinds. They are also prepared to supply dies for sheet metal work,



*Improved Glue-Can Top.*

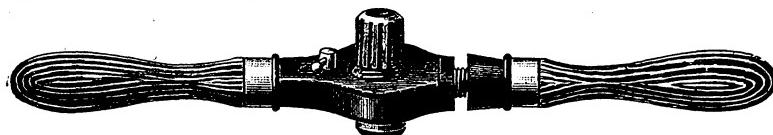
open or close the cover, while the cap and the eccentric shape of the cam draws the top down, making the vessel air tight. In the smaller packages, holes in the cap, surrounded by rubber, are provided for brushes, furnished with the packages, the holes so arranged that the brush can be adjusted to the quantity of glue in the can. The larger cans, for mechanics' use, have no brushes.

**Gunn's Ratchet Auger Handle, No. 5.**

Millers Falls Company, 93 Reade street, New York, are introducing the ratchet auger handle shown herewith. The working parts are of malleable iron, portions of which are nickel plated and

in Fig. 1 and braced against the rim on the bottom, being further held in place by a slight projection passing through the slot shown on the handle. The cup, it is stated, is then rigid, will not collapse in the hand and can be operated with the handle instead of putting the fingers in the top of the

absolutely from every predecessor, so that no key heretofore made can enter one of the new locks, the peculiar form of the keyway precluding the use of any other key blank or the easy production from sheet metal of a key which will even enter the keyway.

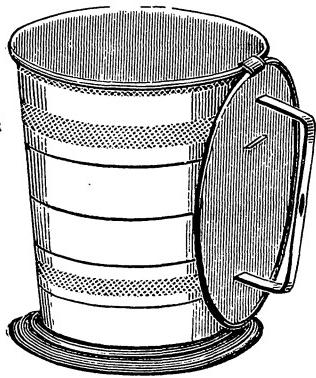


*Gunn's Ratchet Auger Handle No. 5.*

The handles are of second-growth ash. The auger is put up through the center and held in place by the nut, as with common handles. One handle may be taken off by unscrewing, when working in a narrow place or next to a wall. The manufacturers claim that the handle will center and hold auger shanks of all sizes and shapes; that it is not necessary to change the hands from one end to the other in using it, and that it can be made stationary, or to ratchet either way. An attachment is sent out with each handle, by the use of which the tool can be used as a ratchet-handle drill, doing, it is stated, the work of a drill which is more expensive.

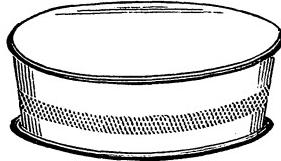
**Travelers' Drinking Cup.**

Illustrations are herewith given of a folding cup which has been put on the market by F. H. Clifford, 265 Dearborn



*Fig. 1.—Travelers' Drinking Cup.*

street, Chicago. Fig. 1 shows the cup open, ready for use, and Fig. 2 represents it closed. It is made with five parts and a handle. When closed it is about  $\frac{1}{4}$  inch in height. It is described as being made with a screw in the bot-



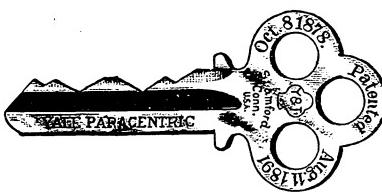
*Fig. 2.—Drinking Cup Closed.*

tom which works into a slot in the handle, so that by revolving the bottom the screw becomes tightly fastened to the handle, thus drawing the parts together, making a tight package. On unscrewing the bottom the handle is loosened and when the rings are pulled out the handle is thrown over, as shown

cup as usual. The manufacturers state that it is strongly made of white metal, nickel plated, is handsome in appearance as well as being strong.

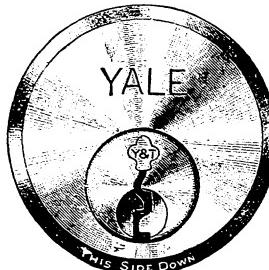
**Yale Paracentric Key.**

The Yale & Towne Mfg. Company, 84-86 Chambers street, New York, and Stamford, Conn., have recently put on the market the key and lock shown in



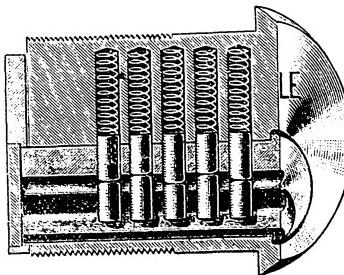
*Fig. 1.—Yale Paracentric Key.*

the accompanying illustrations. The key is made with grooves on each side corresponding with continuous longitudinal barriers in the keyway, which



*Fig. 2.—Paracentric Keyway.*

are described as being so deep as to practically preclude the use of any picking instrument to vertically operate the tumblers. The key, although some-

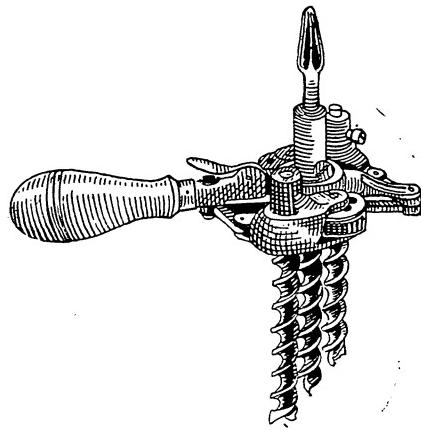


*Fig. 3.—Escutcheon in Section.*

what thicker, weighs but a trifle more than the flat key of the original Yale lock, and yet is stiffer and stronger. It is stated that the Paracentric key differs

**The Columbia Boring Device.**

Frank H. Miller, Stanwood, Iowa, is putting on the market the article above named, an illustration of which appears herewith. This tool is intended for mortising all kinds of locks for doors and windows, and in fact for all mortise work. It is stated that it will fit any bit brace and any standard size bits. In operating the device motion is imparted by the bit stock to the middle gear and its connected bit, when a similar motion is imparted to the auxiliary ones through intermediate gears and their connected bits. The result is the simultaneous boring of three holes, which, it is claimed, is accomplished with little



*The Columbia Boring Device.*

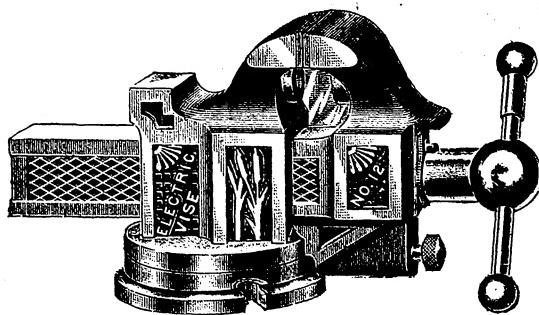
more labor in the case of ordinary sized bits than is required in boring a single hole. It is also claimed that the boring of a plurality of holes is not only facilitated, but as the bits are set exactly in line the work is done with greater accuracy than is the case with a single bit without the exercise of a great deal of care. Provision is made for the quick adjustment of the distance between the bits. It is stated that this tool will bore in corners, giving a chance for the full sweep of the brace, as the brace can be set 6 inches to either side of the bit and run true. It is also stated that the tool is adjustable to any size bits, from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch, to any length, depth and width of mortise, and that a stop gauge and bit stub are furnished with each machine.

NASHVILLE SPOKE AND HANDLE COMPANY, Nashville, Tenn., advise us that spring trade has been quite satisfactory to them, especially the domestic Edge Tool trade, while they have received some gratifying orders for export. They regard the outlook for the fall as encouraging, many of their customers already sending in orders for future delivery. They have recently added to their machinery a lathe on which they can turn Hammer and all kinds of small handles ranging from 4 to 40 inches in length. Surpless, Dunn & Alder, 97 Chambers street, New York, are the company's agents for North and Northwestern territory and for export, Weir & Wilson, Baltimore, being their agents for the South and Southwest.

**The Electric Vise.**

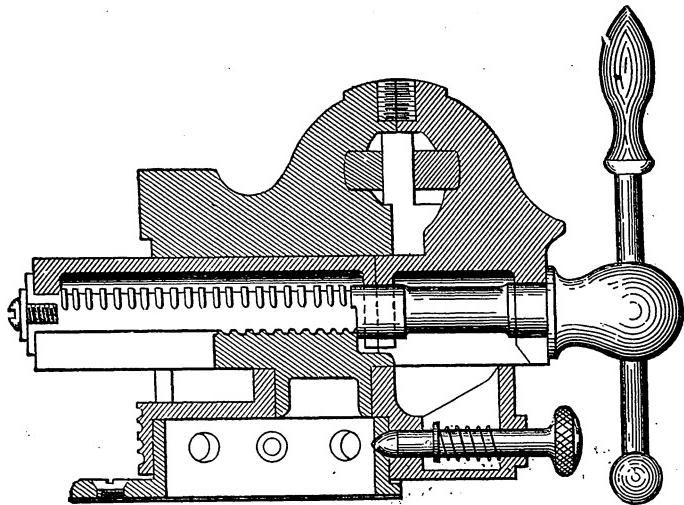
The Capital Machine Tool Company, Weedsport, N. Y., are offering the trade

parts subjected to wear and strain to prevent the breaking and wearing out of the mechanism in the engaging parts. An anvil is made on the back and top



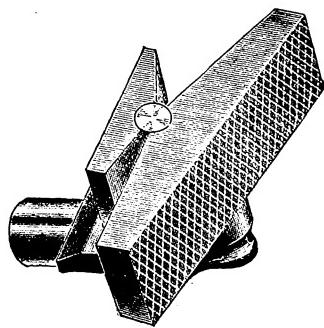
*Fig. 1.—The Electric Vise.*

a line of vises, represented by the part of the vise, and the vise body reaches across full width to allow for a machinist's swivel-bottom iron-workers'



*Fig. 2.—Electric Vise in Detail.*

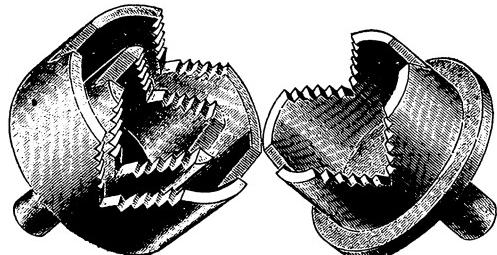
vise, shown in Fig. 1, the construction of which is given in detail in Fig. 2. The



*Fig. 3.—Adjustable Steel Jaw Attachments.*

vise is of the rapid transit pattern, and requires, it is stated, only one move-

large range of work. The adjustable jaw is shown in Fig. 3, which is referred to as being well made and tempered. These are furnished either checked or smooth. The pipe chuck attachment, Fig. 4, is made of solid steel, one set of the jaws being fitted rough and the other set made smooth for finished work. The advantages claimed for this arrangement of chuck in connection with this vise are that it is quick and easily swiveled to any angle for long or short work; that it holds the work firm and steady without crushing; that the work is instantly placed in the vise jaws or taken out, avoiding the use of set screws or taper pins, and that it is a durable device for holding long or short pipes, rods or bolts. The chucks are made in ten sizes to hold pipes, &c., from 0 to 6 inches. At present only one size of vise is ready, this being No. 15, weigh-



*Fig. 4.—Little Giant Pipe Chuck.*

ment in and out, one turn of the hand, to secure the work. The manufacturers remark that the vise is strengthened in

ing 45 pounds, but in a short time the manufacturers expect to have nine different sizes on the market.

**CONTENTS.**

PAGE.	
The British Patent Office.....	1417
Duplex Drilling Machine. Illustrated.....	1417
The Manufacture of Iron in India.....	1418
The Bessemer Metal.....	1419
World's Fair Notes .....	1419
Artistic Wrought Iron.—IV. Illus. ....	1420
The Utica Revolution Counter. Illus. ....	1423
The Pittsburgh Gas Engine. Illustrated.....	1424
Western Failures.....	1425
World's Fair Exhibits.....	1426, 1448
A Prehistoric Blast Furnace.....	1427
Bathing and Washing Facilities in a Brooklyn Factory. Illustrated.....	1427
The Ehrhardt Process of Making Seamless Tubing. Illustrated.....	1429
The Horton Drill Chuck. Illustrated.....	1429
The Week.....	1430
Editorials:	
The World's Fair Congresses.....	1431
The Sinking of the "Victoria".....	1431
Solvent Bankrupts .....	1431
The Ferris Wheel .....	1431
Estimating Cost of Special Machines.....	1432
New Corporations Checked. ....	1432
Enlargement of Cramp's Shipyard.....	1432
Correspondence .....	1433
The Wage Scale Conferences .....	1433
Restrictions on Welsh Tin-Plate Production.....	1433
British Mineral Statistics for 1892.....	1433
San Francisco News.....	1434
Personal .....	1434
New Publications.....	1434
Manufacturing:	
Iron and Steel.. ....	1434
Machinery.....	1435
Miscellaneous.....	1435
Trade Report:	
Philadelphia.....	1436
St. Louis.....	1436
Chicago.....	1437
Cincinnati.....	1438
Boston.....	1438
Pittsburgh.....	1439
Cleveland.....	1440
New York.....	1440
Metal Market.....	1441
Coal Market .....	1441
Financial.....	1441
British Iron and Metal Markets....	1442
Hardware:	
Condition of Trade.....	1443
Notes on Prices .....	1443
Export Notes.....	1444
Organization Among Retail Hardware-men.....	1445
An Arrangement for Nails. Illus.....	1445
Boston & Lockport Block Company.....	1445
Arrangement of Stores. Illustrated.....	1446
Correspondence.....	1447
Sales to Consumers.....	1447
Trade Items.....	1448
The Profit of the Hardware Business.....	1448
The Bear's Tail and Wire Nails .....	1449
Manufacturing.....	1449
Prize Competitions .....	1450
Price-Lists, Circulars, &c.....	1450
It Is Reported —.....	1451
Paints and Colors.....	1451
The Smokeless Frying Pan. Illus .....	1451
The World Apple Parer. Illustrated. ....	1452
Wilhams' Ventilated Folding Feed Basket. Illustrated .....	1452
Improved Glue-Can Top. Illustrated.....	1452
Gunn's Ratchet Auger Handle No. 5. Illustrated.....	1453
Travelers' Drinking Cup. Illus. ....	1453
Yale Paracentric Key. Illustrated.....	1453
The Co umbia Boring Device. Illus.....	1453
The Electric Vise. Illustrated.....	1454
Current Hardware Prices.....	1455
Current Metal Prices.....	1462

# Current Hardware Prices.

JUNE 28, 1893.

Note.—The quotations given below represent the Current Hardware Prices, which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character **G** is used to indicate a range of price; thus discount 50&10@50&10&5% signifies that the goods in question are sold at prices ranging from discount 50 and 10% to discount 50 and 10 and 5%.

**Adjusters, Blind—**

Domestic..... \$ per doz \$8.00 82<sup>1/2</sup>  
Excisor..... \$ per doz \$10.00 50&10&5%  
North..... list not @ 10%  
Zimmerman's—See Fasteners, Blind.

**Ammunition—See Caps, Cartridges, Shells, &c.**

**Anvils—**

Apple Anvils, W D 96..... 15@15&5%  
Peter Wright's..... 11@11<sup>1/2</sup>  
Armitage's Mouse Hole..... 10@10<sup>1/2</sup>  
Am. Wrought, Horse shoe brand..... 11@11<sup>1/2</sup>  
Trenton..... 10@10<sup>1/2</sup>  
Wilkinson's..... 10@10<sup>1/2</sup>  
Moore & Warner Mfg. Co..... 83<sup>1/2</sup>  
Anvill Vise and Drill—

Miller Falls Co., \$18.00..... 20<sup>1/2</sup>  
Cheney Anvill and Vise..... 25<sup>1/2</sup>  
Allen Anvil and Vise \$3.00..... 10@10<sup>1/2</sup>  
Star..... 45&5%

**Apple Parers—See Parers Apple, &c.**

**Augers and Bits—**

Common Augers and Bits..... 70@70&10%  
Boring Machine Augers..... 70@70&10%  
Car Bits, 12-in. twist..... 50<sup>1/2</sup>  
Russell Jennings' Augers and Bits 25@20%  
Jennings' Pattern Car Bits..... 40<sup>1/2</sup>  
Jennings' Pattern Auger Bits..... 60<sup>1/2</sup>  
Snell's Bits..... 60&5%  
C. E. Jennings & Co., No. 10, extension  
tip..... 40<sup>1/2</sup>  
C. E. Jennings & Co., No. 30..... 60<sup>1/2</sup>  
C. E. Jennings & Co., Auger Bits, 3 set,  
83<sup>1/2</sup> quarters, No. 5, \$5 ; No. 30, \$30.25<sup>1/2</sup>  
Lewis' Patent Single twist..... 45<sup>1/2</sup>  
Pugh's Black..... 20<sup>1/2</sup>  
Pugh's Jennings Pattern..... 30<sup>1/2</sup>  
L'Hommedieu Car Bits..... 15@10<sup>1/2</sup>  
Forster Pat. Auger Bits..... 15<sup>1/2</sup>  
Cincinnati Bell-Hangers' Bits..... 30@10<sup>1/2</sup>

**Bit Stock Drills—**

Morse Twist Drills..... 50@10&5%  
Standard..... 50@10&5%  
Cleveland..... 50@10&5%  
Syracuse, for metal..... 50@10<sup>1/2</sup>  
Syracuse, for wood (wood list) 30@30&5%  
Cincinnati, for wood..... 30@10<sup>1/2</sup>  
Cincinnati, for metal..... 45@10<sup>1/2</sup>

**Expansive Bits—**

Clark's small, \$18 ; large, \$26. 85@35&10%  
Ives' No. 4, \$ per doz \$60..... 40<sup>1/2</sup>  
Swan's..... 40<sup>1/2</sup>  
Steer's, No. 1, \$26 ; No. 2, \$18..... 38@40<sup>1/2</sup>  
Stearns' No. 2, \$48..... 20<sup>1/2</sup>

**Gimlet Bits—**

Common..... \$ gross \$2.75@22.25  
Diamond..... \$ per doz \$1.20. 40@10<sup>1/2</sup>  
Bee..... 25@25&5%  
Dow, Cut, Shepardson's..... 45@45&10<sup>1/2</sup>  
Double Cut, C. T. Valley Mfg. Co., \$5.00 25<sup>1/2</sup>  
Double Cut, Hartwell's, \$ gross, \$5.00 25<sup>1/2</sup>  
Double Cut, Douglass'..... 40@10<sup>1/2</sup>  
Double Cut, Ives..... 60@60&10<sup>1/2</sup>

**Hollow Augers—**

Ives'..... \$33@33<sup>1/2</sup>  
French, Swift & Co. (Beecher) { & 10%  
Douglas'..... 25<sup>1/2</sup>  
Bonney's Adjustable, \$ per doz \$48..... 50<sup>1/2</sup>  
Stearns'..... 20@10<sup>1/2</sup>  
Ives' Expansive, each \$4.50..... 50@10<sup>1/2</sup>  
Wood's..... 25@25&5%  
Universal Expansive, each \$4.50..... 25<sup>1/2</sup>  
Cincinnati Adjustable..... 25@10<sup>1/2</sup>  
Cincinnati Standard..... 25@10<sup>1/2</sup>

**Ship Augers and Bits—**

L'Hommedieu's..... 15@10@15&10&5%  
Watrous'..... 25@25&10<sup>1/2</sup>  
Snell's..... 25@25&10<sup>1/2</sup>  
Snell's Ship Auger Patt'n Car Bits, 15@10@15&10<sup>1/2</sup>

**Awl Hafts—See Harts, Awl.**

**Awls—**

Awls, Sewing, Common..... \$ gr. 35<sup>1/2</sup>@90<sup>1/2</sup>  
Awls, Should. Peg..... \$ gr. \$1.50@80<sup>1/2</sup>  
Awls, Pat. Peg..... \$ gr. 35@38<sup>1/2</sup>  
Awls, Shouldered Brad. \$ gr. \$1.30@1.40  
Awls, Handled Brad. \$ gr. \$2.50@80<sup>1/2</sup>  
Awls, Handled Scratch. \$ gr. \$4.00@4.50  
Awls, Socket Scratch. \$ per doz \$1.10@2.20

**Awl and Tool Sets—See Sets, Awl and Tool.**

**Axes—**

Plain, Beveled, First quality, best brands \$7.00 \$7.50  
First qual, other brands { 6.50 7.00  
Second quality..... 5.50 6.00

**Axle Grease—See Grease, Axe.**

**Axes—**

No. 1..... \$3@4<sup>1/2</sup>, No. 2, 5@8<sup>1/2</sup>  
Nos. 7 to 14..... 60@10<sup>1/2</sup>  
Nos. 15 to 18..... 47<sup>1/2</sup> { \$ cash  
Nos. 19 to 22..... 70<sup>1/2</sup>  
Concord Axles, loose collar..... 45@6<sup>1/2</sup>  
Concord Axles, solid collar..... 53<sup>1/2</sup>@6<sup>1/2</sup>  
National Tubular Self Oiling..... 83<sup>1/2</sup>@33<sup>1/2</sup>

**Bag Holders—See Holders Bag.****Balances—**

Spring Balances..... 40<sup>1/2</sup>  
Chatillon, \$ doz \$0.80 0.95 1.75 net  
Chatillon Straight Balances..... 40<sup>1/2</sup>  
Chatillon Circular Balances..... 60@10<sup>1/2</sup>

**Barb Wire—See Wire, Barb.****Bars—Crow—**

Cast Steel..... \$ per doz \$3<sup>1/2</sup>  
Iron, Steel Points..... \$ per doz \$3<sup>1/2</sup>

**Basins, Wash—**

Standard Fibreware, No. 1, 10<sup>1/2</sup> in. \$1.80;  
12-inch, \$2.00; 13<sup>1/2</sup> inch, \$2.50; 15-inch,  
\$3.00.

**Beams, Scale—**

Scale Beams, List Jan. 12, '82. 50@10<sup>1/2</sup>  
Chatillon's No. 1..... 40<sup>1/2</sup>  
Chatillon's No. 2..... 50<sup>1/2</sup>  
Custer's..... 33<sup>1/2</sup>

**Beaters—****Egg—**

Dover..... \$ per doz \$1.00@8<sup>1/2</sup>  
Duxbury (Standard Co.)..... \$ per doz \$1.00  
Dover (Standard Co.)..... \$ per doz \$1.00  
Duxbury Extra Heavy (Standard Co.)..... \$ per doz \$3.50

Bryant's..... \$ gross \$1.40  
Double (H. & R. Mfg. Co.)..... \$ gro. No. 0  
\$12.00; No. 1, \$16.00 ; No. 2, \$19.00  
Easy (H. & R. Mfg. Co.)..... \$ gro. \$12.00  
Triple (H. & R. Mfg. Co.)..... \$ gro. \$16.00  
Spiral..... \$ gro. \$12.50 @ \$4.50  
Improved Acme (H. & R. Mfg. Co.)..... \$ gro. \$9.00  
Silver & Co. .... \$ per doz \$5.50

Keystone, P. D. & Co., Each, No. 1, \$1;  
No. 2, \$2..... 20<sup>1/2</sup>

**Bells—****Cow—**

Common Wrought..... 60@10<sup>1/2</sup>  
Western, Sargent's list..... 70@10<sup>1/2</sup>  
Kentucky, "Star"..... 20@10<sup>1/2</sup>  
Kentucky, Sargent's list..... 70@10<sup>1/2</sup>  
Kentucky Durham..... 70@10<sup>1/2</sup>  
Dodge, Genuine Kentucky..... 70@70@10<sup>1/2</sup>  
Texas Star..... 60@10@50@10<sup>1/2</sup>

**Door—**

Gong, Abbe's..... 33<sup>1/2</sup>@10<sup>1/2</sup>  
Gong, Yankee..... 45@10<sup>1/2</sup>  
Gong, Bartons..... 40@10@50<sup>1/2</sup>  
Crane, Brooks..... 50@10@50<sup>1/2</sup>  
Crane, Cone's..... 10<sup>1/2</sup>  
Crane, Connel's..... 20@10<sup>1/2</sup>  
Lever, Sargent's..... 60@10<sup>1/2</sup>  
Lever, Taylor's Bronzed or Plated, net  
Lever, Taylor's Japanned..... 25@10<sup>1/2</sup>  
Lever, R. & E. Mfg. Co.'s..... 50@10@25  
Full, Brook's..... 50@10@25

**Electric—**

Wollensak's..... 20<sup>1/2</sup>  
Bigelow & Dowse..... 20<sup>1/2</sup>

**Hand—**

Light Brass..... 70@10@70@10<sup>1/2</sup>  
Extra Heavy..... 70<sup>1/2</sup>  
White..... 70<sup>1/2</sup>

Silver Chime..... 33<sup>1/2</sup>@10<sup>1/2</sup>  
Globe Cone's Patent..... 25@10@35<sup>1/2</sup>

**Miscellaneous—**

Call..... 45@50<sup>1/2</sup>  
Farm Bells..... \$ per doz \$3<sup>1/2</sup>&3<sup>1/2</sup>  
Steel Alloy Church and School Bells. 40<sup>1/2</sup>

Blacksmiths'..... 60@10@5@60@10@10<sup>1/2</sup>  
Molders'..... 40@10@50<sup>1/2</sup>  
Hand Bellows..... 40@10@50<sup>1/2</sup>

**Belting, Rubber—**

Common Standard..... 75@75@10<sup>1/2</sup>  
Standard..... 70@5@70@70@10<sup>1/2</sup>

Extra..... 60@10@80@60@10@10<sup>1/2</sup>  
Detroit Perfected Tire Bender..... 15<sup>1/2</sup>  
Green River Tire Binders and Upsetters..... 20<sup>1/2</sup>

**Bits—**

Auger, Gimlet, Bit Stock Drills, &c.,  
see Augers and Bits.

**Bit Holders—See Holders.****Blind Adjusters—See Adjusters, Blind.****Blind Fasteners—See Fasteners, Blind.****Blind Staples—See Staples, Blind.****Blocks—**

Cleveland Block Co., Mal. Iron. 50@50@10<sup>1/2</sup>

Moore's Novelty, Mal. Iron. .... 50<sup>1/2</sup>

Sure Grip Steel Tackle Blocks. 25<sup>1/2</sup>

See also Machines, Hoisting.

**Bolts—****Carriage, Machine, &c.—**

Com. List June 10, '84. 75@80@80<sup>1/2</sup>

Genuine Eagle, Norway, list Oct. '84. 80@85@80@10<sup>1/2</sup>

Eagle, Norway, list Oct. '84. 80@80@80@10<sup>1/2</sup>

Phila. pattern, list Oct. 7, '84. 60@65@60@10<sup>1/2</sup>

R. B. & W., old list..... 70<sup>1/2</sup>

Machine, list Jan. 1, 1890. 50@50@10<sup>1/2</sup>

Bolt Ends, list Jan. 1, 1890. 50@50@10<sup>1/2</sup>

WRUGHT BRASS—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Broad..... 50@10@50<sup>1/2</sup>

Loose Joint..... 50<sup>1/2</sup>

Loose Joint, Japanned..... 50<sup>1/2</sup>

Loose Joint, Jap. with Acorns. 50<sup>1/2</sup>

Parliament Butts..... 50<sup>1/2</sup>

Mayer's Hinges..... 50<sup>1/2</sup>

Loose Pin, Acorns..... 50<sup>1/2</sup>

Loose Pin, Acorns, Japanned..... 50<sup>1/2</sup>

Plated Tips..... 50<sup>1/2</sup>

WROUGHT IRON—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Broad..... 50@10@50<sup>1/2</sup>

Loose Joint, Broad..... 50<sup>1/2</sup>

Table Butts, Back Flaps, &c. 50<sup>1/2</sup>

Inside Blind, Regular. 50<sup>1/2</sup>

Inside Blind, Light. 50<sup>1/2</sup>

Loose Pin..... 50<sup>1/2</sup>

Bronzed Wrought Butts. 50@50@10<sup>1/2</sup>

WROUGHT STEEL—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Lt. Narrow..... 50@10@50<sup>1/2</sup>

Fast Joint, Broad..... 50<sup>1/2</sup>

Loose Joint, Broad..... 50<sup>1/2</sup>

Table Butts, Back Flaps, &c. 50<sup>1/2</sup>

Inside Blind, Regular. 50<sup>1/2</sup>

Inside Blind, Light. 50<sup>1/2</sup>

Loose Pin..... 50<sup>1/2</sup>

WROUGHT STEEL—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Lt. Narrow..... 50@10@50<sup>1/2</sup>

Fast Joint, Broad..... 50<sup>1/2</sup>

Loose Joint, Broad..... 50<sup>1/2</sup>

Table Butts, Back Flaps, &c. 50<sup>1/2</sup>

Inside Blind, Regular. 50<sup>1/2</sup>

Inside Blind, Light. 50<sup>1/2</sup>

Loose Pin..... 50<sup>1/2</sup>

WROUGHT STEEL—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Lt. Narrow..... 50@10@50<sup>1/2</sup>

Fast Joint, Broad..... 50<sup>1/2</sup>

Loose Joint, Broad..... 50<sup>1/2</sup>

Table Butts, Back Flaps, &c. 50<sup>1/2</sup>

Inside Blind, Regular. 50<sup>1/2</sup>

Inside Blind, Light. 50<sup>1/2</sup>

Loose Pin..... 50<sup>1/2</sup>

WROUGHT STEEL—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Lt. Narrow..... 50@10@50<sup>1/2</sup>

Fast Joint, Broad..... 50<sup>1/2</sup>

Loose Joint, Broad..... 50<sup>1/2</sup>

Table Butts, Back Flaps, &c. 50<sup>1/2</sup>

Inside Blind, Regular. 50<sup>1/2</sup>

Inside Blind, Light. 50<sup>1/2</sup>

Loose Pin..... 50<sup>1/2</sup>

WROUGHT STEEL—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Lt. Narrow..... 50@10@50<sup>1/2</sup>

Fast Joint, Broad..... 50<sup>1/2</sup>

Loose Joint, Broad..... 50<sup>1/2</sup>

Table Butts, Back Flaps, &c. 50<sup>1/2</sup>

Inside Blind, Regular. 50<sup>1/2</sup>

Inside Blind, Light. 50<sup>1/2</sup>

Loose Pin..... 50<sup>1/2</sup>

WROUGHT STEEL—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Lt. Narrow..... 50@10@50<sup>1/2</sup>

Fast Joint, Broad..... 50<sup>1/2</sup>

Loose Joint, Broad..... 50<sup>1/2</sup>

Table Butts, Back Flaps, &c. 50<sup>1/2</sup>

Inside Blind, Regular. 50<sup>1/2</sup>

Inside Blind, Light. 50<sup>1/2</sup>

Loose Pin..... 50<sup>1/2</sup>

WROUGHT STEEL—

Fast Joint, Narrow..... 50@10@5@50<sup>1/2</sup>

Fast Joint, Lt. Narrow..... 50@10@50<sup>1/2</sup>

Fast Joint, Broad..... 50<sup>1/2</sup>

<b>Chalk Lines</b> —See Lines.	
<b>Checks, Door</b> —	
Unity ..... 50%	
<b>Chisels</b> —	
<b>Socket Framing and Firmer</b>	
P. S. & W. .... New Haven, 75 & 10 @ 75 & 10 & 10% Witherby, 75 & 10 @ 75 & 10 & 10% Mix, 75 & 10 @ 75 & 10 & 10% Ohio Tool Co. .... 75 @ 75 & 5% Donglass, 60 & 10 @ 80 & 10 & 5% Buck Bros. .... 30% Merrill, 60 & 10 @ 80 & 10 & 5% L. & I. J. White, 30 @ 30 & 5% <b>Tanged and Miscellaneous.</b> Tanged Firmer, 50 @ 50 & 10% Butchers', 74.75 @ 55 \$00 Spear & Jackson's, 55 to 2% Buck Bros. .... 30% Gold Chisels, 8 d. .... 15 @ 16% <b>Chucks</b> — Beach Pat., each, \$8.00 ..... 20% Morse's Adjustable, each, \$7.00, 20 @ 20 & 5% Danbury, ..... each, \$6.00, 30 @ 30 & 5% Syracuse, Balz Pat. .... 25% Graham Patent, 33 1/2% Skinner's Patent Chucks. Combination Lathe Chucks, 33 1/2% Universal Lathe Chucks, 40% Independent Lathe Chucks, 40% Drill Chucks ..... 15% Union Mfg. Co. Victor ..... 8.50, 25% Combination ..... 40% Universal ..... 40% Independent ..... 40% <b>Churns</b> — Twin Union, each, 5 gal. \$8.25; 7 gal., \$9.75; 10 gal. \$4.25. McDermott Star Barrel Churn, each 6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25. <b>Clamps</b> — R. I. Tool Co.'s Wrought Iron, 25% Adjustable, Cincinnati, 15 @ 10% Adjustable, Hammers, 15 @ 15 1/2% Adjustable, Stearn's, 30 @ 30 & 10% Stearn's Adjustable Cabinet and Corner, 30 @ 30 & 10% Cabinet, Sargent's, 70 & 10% Carriage Makers, Sargent's, 75 @ 75 & 5% Carriage Makers, P. S. & W. Co., 40 & 10% Eberhard Mfg. Co., 40 @ 45 & 10 & 5% Warren's, 40 @ 40 & 10 & 5% Saw Clamps see Vise, Saw Fliers. Carpenters, Cincinnati, 25 & 10% Barnes' Machinists' Clamps ..... 33 1/2% <b>Cleavers, Butchers'</b> — Bradley's ..... 25 @ 30% L. & I. J. White, 20 & 5% Beatty's, 40 @ 40 & 5% New Haven Edge Tool Co.'s, 40% P. S. & W. .... 33 1/2 @ 33 1/2 & 10% Foster Bros. .... 30% Schulte, Lohoff & Co. .... 40 @ 40 & 5% <b>Clips</b> — Norway Axle, 1/4 & 5 1/2%, 55 & 55% 2d Grade Norway Axle, 1/4 & 6-1/2, 65 & 55% Superior Axle Clips, 68 @ 55 @ 70% Norway Spring Bar Clips, 5-1/2, 80 & 55% Wrought Iron Felloe Clips, 8 d. 5 1/2% Steel Felloe Clips ..... 8 d. 5 1/2% Baker Axle Clips ..... 25% <b>Cloth and Netting, Wire</b> — —See Wire, &c.	<b>Braided, Crown White, 8 d. 50% to 50% Braided, Crown Drab and Fancy, 8 d. 50% Wire Picture— Braided or Twisted ..... 50 &amp; 5 @ 50 &amp; 15% <b>Corkscrews</b>—See Screws, Cork.</b>
<b>Corn Knives and Cutters</b> — —See Knives, Corn.	
<b>Crackers Nut</b> — Table (H. & B. Mfg. Co.) ..... 40% Blake's Pattern, 1/2 doz. \$2.00 ..... 10% Turner & Seymour Mfg. Co. .... 50% Acme, 50% Japanned, 5 gro. \$30 ..... 50% Nickel Plated, 5 gro. \$30 ..... 10% <b>Cradles</b> — Grain ..... 50 & 2 @ 50 & 5 & 2% <b>Crayons</b> — White Crayons, 5 gross ..... 7 @ 8% D. M. Stewart Mfg. Co.: Metal Workers', 5 gross, \$1.75 ..... 25% Rolling Mill, 5 gross, 2.50 ..... 25% Railroad, 5 gross, 2.00 ..... 25% Soapstone Pencils, 5 gross, 1.00 ..... 25% See also Chalk.	
<b>Creamery Pails</b> —See Pails, Creamery.	
<b>Crow Bars</b> —See Bars, Crow.	
<b>Curry Combs</b> — —See Combs, Curry.	
<b>Curtain Pins</b> — —See Pins, Curtain.	
<b>Cutters</b> — <b>Meat</b> — Dixon's, 8 d. ..... 40 & 5% Nos. ..... 1 2 3 4 5 \$14.00 \$17.00 \$19.00 \$30.00 \$60.00 Woodruff's, 8 d. ..... 40 & 5% Nos. ..... 100 150 \$15.00 \$18.00 Hale's Pattern, 8 d. ..... 70% Nos. ..... 11 12 13 18 \$27.00 \$38.00 \$45.00 \$45.00 American ..... 30% Nos. 1 2 3 4 5 B 5 \$5.75 \$7.10 \$10.25 \$50.50 \$80.00 Enterprise ..... 25% Nos. ..... 10 12 22 32 42 \$2.50 \$4.81 \$6.81 \$16.00 \$26.00 Miles' Challenge, 8 d. ..... 40 @ 45 & 10% Nos. ..... 1 2 3 \$22.00 \$30.00 \$40.00 Home No. 1, 8 d. ..... 55 & 10% Draw Cut, each: Nos. 5 6 8 \$50 \$75 \$80 \$225 ..... 20 @ 25% Beef Shavers (Enterprise) ..... 20% Little Giant (P. S. & W. Co.) ..... 50% Chadborn's Smoked Beef Cutter, 8 d. ..... 66.00 <b>Slaw a-d Kraut</b> — Tucker & Dorsey Mfg. Co.: Slaw Cutters, 1 Knife, 5 gross, \$21.00 Slaw Cutters, 2 Knives, 5 gross, \$30.00 Kraut Cutters, 40% <b>Tobacco</b> — Champion ..... 20 & 10 @ 30% All Iron ..... 8 d. ..... 24% Nashua Lock Co.'s, 8 d. ..... 18.00, 50 @ 55% Wilson's ..... 55% Sargent's, 8 d. ..... 24.00, 55 & 10% Acme ..... 8 d. ..... 20.00, 40% <b>Washer</b> — Smith's Pat. .... 8 d. \$12.00, 20 & 10 & 10% Johnson's, ..... 8 d. \$11.00, 33 1/2% Perry's, 8 d. ..... Pol. \$14; Pad. \$18, 55% Appleton's, ..... 8 d. ..... \$16.00, 60 & 10% Bouney's, ..... 30 & 10% Cincinnati, ..... 25 & 10% <b>Dampers, &amp;c.</b> — Dampers, Buffalo, 40 & 10% Buffalo Dumper Clips, 40 & 10% Crown Damper, 40% Excelsior Hot Air, 50% <b>Diggers, Post Hole, &amp;c.</b> — Samson, 8 d. ..... \$34.00 ..... 25 @ 26 & 10% Fletcher Post Hole Augers, 8 d. ..... \$36.00 ..... 20 @ 20 & 10% Eureka Diggers, 8 d. ..... \$12.00 @ 13.00 Vaughan's Post Hole Auger, 8 d. ..... \$8.50 @ \$9.50 Kohler's Little Giant, 8 d. ..... \$18.00 Kohler's Hercules, 8 d. ..... \$14.00 Kohler's Invincible, 8 d. ..... \$12.00 Kohler's New Champion, 8 d. ..... \$8.00 Scheidler, 8 d. ..... \$18.00 Cronk's Post Bars, 8 d. ..... \$60.00 ..... 50 & 50 @ 50 & 10% Gibb's Post Hole Digger, 8 d. ..... \$15.00 ..... 50% Gibbs' National, 8 d. ..... \$12.00 ..... 50% Gibbs' Columbia, 8 d. ..... \$13.00 ..... 50% Gibbs' Imperial, 8 d. ..... \$7.50 ..... 50% Shimer's Hollow Handle, 8 d. ..... \$24.00, 50% <b>Dividers</b> —See Compasses.	
<b>Dog Collars</b> —See Collars, Dog.	
<b>Door Checks</b> — —See Checks, Door.	
<b>Door Springs</b> — —See Springs, Door.	
<b>Drawers</b> — Money, 8 d. ..... \$18 @ 22% Waddell's Improved, 8 d. ..... \$15.00	
<b>Drawing Knives</b> — —See Knives, Drawing.	
<b>Drills and Drill Stocks</b> — Blacksmiths', ..... each \$1.75 Blacksmiths' Self Feeding, each \$7.50, 20% Breast, P. S. & W. ..... 40 & 10% Breast, Wilson's, ..... 30 & 5% Breast, Miller's Falls, ..... each \$3.00, 25% Breast, Bartholomew's, ..... each \$2.50 ..... 25 & 10 @ 40% Fatchet, Merrill's, ..... 20 @ 20 & 5% Fatchet, Ingersoll's, ..... 25% Fatchet, Parker's, ..... 20 @ 20 & 5% Fatchet, Whitney's, ..... 20 @ 10% Fatchet, Weston's, ..... 20 @ 25% Fatchet, Moore's Triple Action, 25 @ 30% Fatchet, Curtiss & Curtiss, ..... 30% Whitney's Hand Drill, Plain, \$11.00 ..... Adjustable, \$12.00 ..... 20 @ 10% Automatic Boring Tools, ..... \$1.75 @ \$1.85 ..... 20 @ 10% Chicago Automatic Drill, ..... 20 @ 10% Goodell Automatic Drills, ..... 40 & 5% <b>Twist Drills</b> — Cleveland, ..... 50 & 10 @ 10% Diamond, W. & B. ..... 50 & 10 @ 10% Graham's Pat. Groove Shank, 50 & 10 @ 10% Morse, ..... 50 & 10 @ 10% New Process, ..... 50 & 10 @ 10% Standard, ..... 50 & 10 @ 10% Syracuse (Metal list), ..... 50 & 10 @ 10% <b>Imported</b> — Butcher's List, 20% Stuhl's List, 25 @ 30% Pat. Peg. Leather Ton. ..... 50% Pat. Peg. Leather Ton. ..... 50% Fixtures Grindstone— Sargent's Patent ..... 70 @ 10% Reading Hardware Co. ..... 50% S. & W. Co. ..... 50% Moore's ..... 55% <b>Fluting Machines</b> — See Machines, Fluting.	
<b>Fluting Scissors</b> — See Scissors, Fluting.	
<b>Fodder Squeezers</b> — See Squeezers, Fodder.	
<b>Forks</b> — Bay, Manure, &c. Asso. List, 70 @ 70 & 5% Bay, Manure, &c., Phila. List, 60 @ 60 & 10 & 5% Plated, see Spoons.	
<b>Frames</b> — <b>Saw</b> — White Vermont, 8 d. gro. \$9.00 @ 10 @ 10% Red, Polished and Varnished, 8 d. ..... \$1.50, 50% <b>Screen, Window and Door</b> — Porter's Pat. Window and Door Frame, 83 @ 10% Warner's Screen Corner Irons, 83 @ 10% Stearns' Frames and Corners, 25 @ 25 & 10% Cortland, ..... 40 @ 40% Phillips' Window Screen Frames, 50 @ 50 & 5% Bonanza Window Screens, 50 & 5 @ 50 & 10% Empire Fancy Screen Doors, 8 d. ..... 50% <b>Freezers Ice Cream</b> — White Mountain, 80 @ 60 & 5% Granite State, ..... 70 @ 70 & 5% Arctic, ..... 60% American, ..... 60% Buffalo Champion, 65 @ 65 & 5% Shepard's Lightning, 65 @ 65 & 5% Gem, ..... 65% Blizzard, ..... 70% Double Action Crown, ..... 60% Crown, ..... 60% Star, ..... 60% Peerless, ..... 60 @ 10% Giant, ..... 70% Boss and Pet, ..... 60 @ 10 & 10 @ 10% Keystone, P. D. & Co., each, \$1.50, 20% Standard, ..... 60 @ 60 & 5% Standard Double Action, 60 @ 60 & 5% Expert, ..... 65 @ 65 & 5% Model, ..... 60 @ 60 & 5% Confectioners' Machine, 50% <b>Fruit and Jelly Presses</b> — See Presses, Fruit and Jelly.	
<b>Fruit Pickers</b> — See Pickers, Fruit.	
<b>Fry Pans</b> —See Pans, Fry.	
<b>Funnels</b> — Gersdorff's Perfection, Standard and Globe, 7/4, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro., 25%; 10 to 12 gro., 30%; Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz., 25% <b>Furnaces, Soldering</b> — Burgess No. 3 Gem, the reservoir, \$7.00 Burgess No. 3 Gem, Copper reservoir, \$8.00 Clayton & Lambert No. 1 Fire-Pot, complete, \$6.00 Fuse—Dls. 12 @ 15%, 1000 ft. Common Hemp Fuse, for dry ground, \$2.70 Common Cotton Fuse, for wet ground, \$3.85 Single Taped Fuse, for very wet gr., 4.80 Double Taped Fuse, for very wet gr., 4.80 Triple Taped Fuse, for very wet gr., 5.60 Small Gutta Percha Fuse, for water, 7.50 Large Gutta Percha Fuse, for water, 12.00	
<b>Gates Molasses</b> — Stebbin's Pattern, 80 @ 80 & 5% Stebbin's Genuine, 60 @ 10 & 10% Stebbin's Timed Ends, 40 & 10% Lincoln's Pattern, 70 @ 70 & 5% Weed's, ..... 20 & 10% Boss, 8 d.: No. 1, \$7; No. 2, \$8; No. 3, \$9; No. 4, \$10 ..... 60 & 10 & 10% <b>Gauges</b> — Marking Mortise, &c. ..... 60 @ 10% Starrett's Surface, Center and Scratch, 25 @ 10% Stanley R. & L. Co.'s Butt and Rabbet Gauge, ..... 20 & 10% Barrett's Comb, Roller Gauge, ..... 20 & 10% Weed's, ..... 20 & 10% <b>Gates Molasses</b> — Stebbin's Pattern, 80 @ 80 & 5% Stebbin's Genuine, 60 @ 10 & 10% Stebbin's Timed Ends, 40 & 10% Lincoln's Pattern, 70 @ 70 & 5% Weed's, ..... 20 & 10% Boss, 8 d.: No. 1, \$7; No. 2, \$8; No. 3, \$9; No. 4, \$10 ..... 60 & 10 & 10% <b>Gauge</b> — Marking Mortise, &c. ..... 60 @ 10% Starrett's Surface, Center and Scratch, 25 @ 10% Stanley R. & L. Co.'s Butt and Rabbet Gauge, ..... 20 & 10% Barrett's Comb, Roller Gauge, ..... 20 & 10% Weed's, ..... 20 & 10% <b>Gates Molasses</b> — Stebbin's Pattern, 80 @ 80 & 5% Stebbin's Genuine, 60 @ 10 & 10% Stebbin's Timed Ends, 40 & 10% Lincoln's Pattern, 70 @ 70 & 5% Weed's, ..... 20 & 10% <b>Gauge</b> — With Scale, ..... 30% Without Scale, ..... 20% Wire, Wheeler, Madden & Co., ..... 10% Wire, Morse's, ..... 10% Wire, Brown & Sharpe's, ..... 10 @ 10% Wire, F. P. & W. Co., ..... 10 @ 10% <b>Gimlets</b> — Nail and Spike, 50 & 10 & 5% Eureka Gimlets, 60 & 10 & 5% Diamond Gimlets, 50 @ 50 & 5% Double Cut, Shepardson's, 45 @ 45 & 5% Double Cut, Ives', 60 @ 60 & 5% Double Cut, Douglass', 40 @ 10% <b>Glue</b> — Le Page's Liquid, 25 @ 25 & 5% Upton's Liquid, ..... 35% Improved Process, ..... 25 @ 25 & 5% Dodd's Liquid Glue, ..... 25 @ 25 & 5% <b>Clue Pots</b> —See Pots, Glue.	
<b>Grease, Axe</b> — Fraser's, ..... 50 @ 50 & 5% Frasier's, in boxes, ..... 50 @ 50 & 5% Dixon's Everlasting, in bxs., 8 d. doz 1 d. 20, 2 d. \$2.00 Dixon's Everlasting, 10 to 12 pails, ea. 85% Lower grades, special brands, ..... 40 @ 40 & 5% Axline, tin boxes, ..... 50 @ 50 & 5% English Coach, wooden boxes, ..... 50 @ 50 & 5% English Coach, wooden boxes, ..... 50 @ 50 & 5% Tiger, wooden boxes, ..... 50 @ 50 & 5% Tiger, 5 to 10 pails, ..... 50 @ 50 & 5% <b>Grindstones</b> — Family, regular list, ..... 60% Family, Cleveland Stone Co., ..... 60% <b>Grindstone Fixtures</b> — See Fixtures, Grindstone.	
<b>Gun Powder</b> —See Powder.	
<b>Hack Saws</b> —See Saws.	
<b>Hats, Awl</b> — Sewing, Brass Fer. 8 gr., ..... 81 75 Pat. Sewing, Short, 8 d., ..... 45 @ 50 & 5% Pat. Sewing, Long, ..... 50 @ 50 & 5% Pat. Peg. Plate Top, 8 d., ..... 40 @ 45 & 5% Pat. Peg. Leather Ton., ..... 50% 	

**Halters—**

Cover'ts. Rope, Jute.....	60&10&10&2%
Cover'ts. Rope, 7-16-in., Jute.....	70&2%
Cover'ts. Rope, 14-in., Hemp.....	60&2%
Cover'ts. Adj. Rope Halters.....	40&2%
Cover'ts. Hemp Horse and Cattle Tie, 50&10&2%	
Cover'ts. Jute Horse Ties.....	70&2%
Cover'ts. Jute Cattle Ties.....	70&10&2%
Cover'ts. Adj. Web Halters.....	35&2&2%
Cover'ts. Saddlery Works Halters.....	35&2%
Cover'ts. Saddlery Works Horse and Cattle Ties.....	50&4%
Cover'ts. Saddlery Works Handy Web Halters.....	55&3%

**Hammers—**

Handled Hammers—	
Maydole's, list Dec. 1, '85.....	25&10&35%
Buffalo Hammer Co. ....	
Humason & Beckley.....	50&10%
Atha Tool Co. ....	
G. Hammond & Son.....	40&10&5%
Fayette R. Plumb.....	
Artisan's Choice, A. E. Nail.....	40&10%
Regular Y. & P. A. E. Nail.....	50%
Horsehoe Turning Hammers.....	50%
Other Hammers.....	50&10%
Cheney's Claw.....	40&10%
Cheney's Machinist's & Riveting.....	50&2%
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.75.....	50&10%
Nelson Tool Works.....	40&10%
Warner & Nobles, new list.....	25&10%
Peck, Stow & Wilcox.....	50&10%
Sargent's.....	40&10&10%

**Heavy Hammers and Sledges—**

3 lb and under, 35&40%	75&10&75&10%
5 to 5 p.....	55%
Over 5 p, 35&40%	

Wilkinson's Smiths.....	10%@11&12%
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**Handcuffs and Leg Irons—**

See Police Goods.	
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**Handles—**

Cross-Cut Saw Handles—	
Atkins', new list .....	.40%
Champion.....	.15%
Ely's Perfection.....	\$.00 per doz.

**Iron, Wrought or Cast—**

Door or Thumb.....	
Nos.....	0 1 2 3 4
Per doz.....	\$0.90 1.00 1.08 1.35 1.50
60&10&10%	
Roggins' Latches.....	\$.00 per doz @ 35%
Bronze Iron Drop Latches.....	\$.00 per doz @ 35%
Jap'd Store Door Handles-Nuts.....	\$.15
Plate, \$1.10; no plate, \$.88.....	net
Bar Door, # per doz \$1.40.....	10&10%
Chest and Lifting.....	70&70&10%

**Wood—**

Saw and Plane.....	40&10&50%
Hammer, Hatchet, Axe, &c. ....	40&40&55%
Brad Awl.....	\$.00 per doz @ 35%
Hickory Firmer Chisel, ass'd. ....	\$.gr 4.50
Hickory Firmer Chisel, large.....	\$.gr 5.00
Apple Firmer Chisel, large.....	\$.gr 5.00
Apple Firmer Chisel, large.....	\$.gr 6.00
Socket Firmer Chisel, ass'd. ....	\$.gr 3.00
Socket Framing Chisel, ass'd. ....	\$.gr 5.00
J. B. Smith & Co.'s Pat File.....	50%
File, assorted.....	\$.gr 2.75
Anger, assorted.....	\$.gr 5.00
Anger, large.....	\$.gr 7.00
Pat. Auger, Ives'.....	.30&10%
Pat. Auger, Douglass.....	\$.set \$1.25
Pat. Auger, Swan's.....	\$.set \$1.00
Hoe, Rake, Shovel, &c. ....	\$.00 per doz @ 30%

**Hangers—**

Barn Door, old patterns.....	70&70&85%
Barn Door, New England.....	70&70&85%
Samson Steel Anti-Friction.....	55%
Orleans Steel.....	55%
Hamilton Wrought Steel Track.....	55%
Champion.....	60&10%
Climax Anti-Friction.....	55%
Zenith for Wood Track.....	55%
Sterling Standard.....	50&10&60%
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50&2%
Kidder's.....	50&50&10%
Boss.....	60&10&60&10&55%
Best Anti-Friction.....	60&10&60&10&55%
Duplex (Wood Track).....	60&10&60&55%
Terry's Modern.....	50&10&60&55%
Terry's Ideal.....	50&10&60&55%
Terry's Solid.....	50&10&60&60%
Terry's Shield.....	50&10&60&60%
Terry's Wrought Single Strap.....	50&10%
Cronk's Patent, Steel Covered.....	60&10%
Carrier Steel Anti-Friction.....	60&10%
Richards'.....	30&30&10%
Lane's New Standard.....	50&50&55%
Lane's Standard.....	50&50&55%
Lane's Parlor.....	40%
Warner's Pat.....	20&10&10%
Stearns' Anti-Friction.....	20&10&10%
Stearns' Challenge.....	25&10&10%
Cincinnati Nos. 1, \$2.25; 3, \$2.50; 4, \$.25.....	
Paragon, Nos. 5, 54, 7 and 8, ...&10&10%	
Crescent.....	60&60&10&10%
Nickel, Steel, Nos. 0, \$2.25; 1, \$20; 2, \$15.....	40&10&50%
Chicago Anti-Friction.....	30&10%
Star.....	40&10&60&55%
Interstate.....	50&10&60%
Pendulum, Payson's.....	40&10&10%
Moody.....	45%
Economy, \$6.00.....	50&10&10%
Perfection.....	50&10&60&10&55%
Stearns' Anti-Friction.....	20&10&10%
Stearns' Challenge.....	25&10&10%
Cincinnati Nos. 1, \$2.25; 3, \$2.50; 4, \$.25.....	
Paragon, Nos. 5, 54, 7 and 8, ...&10&10%	
Crescent.....	60&60&10&10%
Nickel, Steel, Nos. 0, \$2.25; 1, \$20; 2, \$15.....	40&10&50%
Chicago Anti-Friction.....	30&10%
Star.....	40&10&60&55%
Interstate.....	50&10&60%
Pendulum, Payson's.....	40&10&10%
Moody.....	45%
Economy, \$6.00.....	50&10&10%
Perfection.....	50&10&60&10&55%
Lundy, Steel Parlor.....	40%
Matchless.....	50&10%
Magic'.....	45&10%
Wild West.....	45&10%
Moore's Elevator.....	33&10%
Moore's Baggage Car Door.....	33&10%
Moore's Railroad.....	55%

**Harness Snaps—See Snaps.****Hatchets—**

American Axe and Tool Co. Blood's.....	
Hunt's.....	
Hurd's.....	
Mann's.....	
Peck's.....	
Underhill's.....	40 & 10 @
Buffalo Hammer Co. ....	
Fayette R. Plumb.....	50&5%
C. Hammond & Son.....	
Kelly's.....	
Sargent's & Co. ....	
P. S. & W. Co. ....	
Ten Eyck Edge Tool Co. ....	
Collins.....	10%
Schulte, Lohof & Co. ....	50&50&55%

**Hay and Straw Knives—**

See Knives.

**Hinges—****Blind Hinges—**

Parker.....	75&2%
Buffier.....	50%
Clark's, Nos. 1, 3, 5, 40 and 50. ....	50&80&5%
Clark's Mortise Gravity.....	50&10&5%
Sargent's, Nos. 1, 3, 5, 11, 12, 13. ....	75&75&10&5%
Reading's Gravity.....	75&10&75&5%
Shepard's.....	
Noisless.....	75&10%
Niagara.....	50%
Buffalo.....	50%
Clark's Genuine Pattern.....	50%
O. S. Lull & Porter.....	75&10%
Acme, Lull & Porter.....	75&10%
Queen City Reversible.....	70&10&50&5%
North's Automatic Blind Fixtures.....	50&10&50&5%
North's Double Acting.....	25%
Union Mfg. Co. ....	25%
Bommer's.....	30%
Buckman's.....	15@20%
Chicago.....	30%
Bardsley's Patent Checking.....	15@20%
U. S. ....	25&10%
Empire and Crown.....	20%
Hero and Monarch.....	55%
American, Gem and Star.....	20%
Oxford.....	20%
Royal.....	60%
Reliable.....	60%
Champion.....	60%
No. 10 Matchless.....	60%
25 Unbreakable.....	60%
J. G. C. Covered, # gro. \$30.....	50&85%
Samson.....	60@60&75%
Wiles, No. 1, # gro. \$16; No. 2, \$13.....	50&80@75%
Devore, No. 1.....	\$.gr 13.00
Rex.....	\$.gr 13.00
Freepor.....	\$.gr 12.00
New Idea Nos. 1 and 10.....	\$.gross \$13.00
New Idea Dbl. Acting.....	45%
Ideal No. 3.....	\$.gross \$10.00
Stearns' Noiseless Floor Hinge, # set, \$5.00.....	20&10&30%

**Spring Hinges—**

Geer's Spring and Blank Butts.....	40%
Union Spring Hinge Co.'s list, March, 1886.....	20%
Barker's Double Acting.....	25%
Union Mfg. Co. ....	25%
Bommer's.....	30%
Buckman's.....	15@20%
Chicago.....	30%
Bardsley's Patent Checking .....	15@20%
U. S. ....	25@10%
Empire and Crown.....	20%
Hero and Monarch.....	55%
American, Gem and Star.....	20%
Oxford.....	20%
Royal.....	60%
Reliable.....	60%
Champion.....	60%
No. 10 Matchless.....	60%
25 Unbreakable.....	60%
J. G. C. Covered, # gro. \$30.....	50&85%
Samson.....	60@60&75%
Wiles, No. 1, # gro. \$16; No. 2, \$13.....	50&80@75%
Devore, No. 1.....	\$.gr 13.00
Rex.....	\$.gr 13.00
Freepor.....	\$.gr 12.00
New Idea Nos. 1 and 10.....	\$.gross \$13.00
New Idea Dbl. Acting.....	45%
Ideal No. 3.....	\$.gross \$10.00
Stearns' Noiseless Floor Hinge, # set, \$5.00.....	20&10&30%

**Wrought Iron Hinges—**

List February 14, 1891.	
Strap and T. ....	50@10&50@10&5%
Corrugated Strap and T. ....	50@10&50@5&5%
Screw Hook and T. ....	50@10&50@5&5%
Strap.....	22 to 36 in., \$.gr 75¢
Screw Hook and Eye.....	2 in., \$.gr 5¢
Rolled Blind Hinges, Nos. 32 and 34.....	50@10&50@10&5%
Rolled Hinges, Nos. 262 and 234.....	55@10&55@10&5%
Rolled Plate.....	55@10&55@10&5%
Rolled Raised.....	70@10&70@10&5%
Plate Hinges 6, 10 & 12 in., \$.gr 1.00.....	55@10&55@10&5%
"Providence" over 12 in., \$.gr 1.40.....	55@10&55@10&5%

**Hoes—**

Garden, Mortar, &c. ....	70@70&5&2%
Planter's Cotton, &c. ....	70@70&5&2%
Warren Hoe.....	60@60&55%
Magic'.....	\$.doz \$1.00.
Grub.....	\$.doz \$1.00.

**Handled—**

Extension.....	
Barber's, \$.doz \$15.00.....	40@40&10%
Ives, \$.doz \$20.00.....	60@50&60@10%
Diagonal.....	\$.doz \$24.00, 40@50%
Angular.....	\$.doz \$24.00, 40@50%

**File and Tool—**

Bailey Pat.....	\$.doz \$4.00, 25%
Nicholson File Holders.....	20%

**Sash—**

Motley's Adj. Sash, Medium Size.....	\$.doz \$1.
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Britten, Graham & Mathes, list Jan. 1890. . . . . 60&10&10%  
Plate. . . . . 33&12%  
Barnes Mfg. Co. . . . . 40&40&10%  
Tale. . . . . net price  
Deitz Flat Key. . . . . 30%  
Romer's Night Latches. . . . . 15%  
Brooklyn Latches. . . . . 50&10%  
Warner's Burglar Proof. # doz. \$8.00, 50%  
**Elevator**  
Moore's. . . . . 83%  
**Padlocks**  
List June 10, 1891. . . . . 50&2%  
Norwich Lock Mfg. Co., old list. . . . . 50&2%  
Tale Lock Mfg. Co.'s. . . . . net prices  
Eagle. . . . . 40%  
Eureka, Eagle Lock Co. . . . . 40&2%  
Romer's Nos. 0 to 91. . . . . 30%  
Romer's Scandinavian, &c., Nos. 100 to 505. . . . . 15%  
A. E. Deitz. . . . . 40%  
Champion Padlocks. . . . . 40%  
Hotchkiss. . . . . 30%  
Star. . . . . 60%  
Horseshoe. . . . . # doz. \$9. 50&50&10%  
Barnes Mfg. Co. . . . . 40&40&10%  
Rock's. . . . . 30%  
Scandinavian. . . . . 90&40%  
R. T. Fraim's Keystone Scandinavian, Nos. 118, 120, 130 and 140. . . . . 90&10%  
Other Nos. . . . . 65%  
Ames Sword Co. up to No. 150. . . . . 40%  
Wiemker, Barry & Co. . . . . 50%  
No. 1010 line. . . . . 90&5%  
No. 41 line. . . . . 50%  
No. 61 line. . . . . 60%  
No. 21 line. . . . . 80%  
**Sash, &c.**  
Clarkson's, \$10; No. 2, \$8 # gr. . . . . 33%  
Ferguson's. . . . . 33%  
Victor. . . . . 60&10&2%  
Walker's. . . . . 10%  
Attwell Mfg. Co. . . . . 25&38%  
Reading. . . . . 60%&10%&66%&10&10%  
Hammond's Window Springs. . . . . 40%  
Common Sense, Jap'd, Cop'd and Brzd. . . . . 40%  
CommonSense, Nickel Plated. . . . . # gr. \$4.00  
Universal. . . . . \$ gr. \$10.00  
Kempshall's Gravity. . . . . 30%  
Kempshall's Model. . . . . 60%  
Corbin's Daisy, 1st Feb. 15, 1888. . . . . 60&60&10%  
Payson's Perfect. . . . . 60&10&10%  
Hugunin's Sash Balances. . . . . 25&56%  
Hugunin's New Sash Locks. . . . . 25&56%  
Ives Patent. . . . . 60&10&8%&60&10&10%  
Fish (Lesche's pat.), No. 100. . . . . \$ gr. \$8.  
No. 105. . . . . \$ gr. \$10.  
Davis, Bronze Barnes Mfg. Co. . . . . 60%  
Champion Safety list January, 1893. 70&2%  
Security. . . . . 70%  
Giant, list Jan., 1892. . . . . 70&2%  
Wolcott's. . . . . 70&2%  
Monarch. . . . . 60%  
**Lumber Tools**  
See Tools, Lumber.  
**Lustro**  
Four-ounce bottles. . . . . # doz. \$1.75; # gross. . . . . \$17.00  
**Machines**  
**Boring**  
Without Augers, Upright, Angular. . . . .  
Douglas. . . . . 5.50 6.75. . . . . 50%  
Smith's, Rice's Pat. . . . . 5.50 6.75.40&10&10%  
Jennings. . . . . 5.50 6.75.45&15&10%  
Other Machines. . . . . 2.35 2.75.  
Phillips' Patent. . . . . With Auger. . . . . 7.00 7.50. . . . . 25%  
Miller's Falls. . . . . 7.50. . . . . 25%  
**Fluting**  
Knox, 4½-inch Rolls. . . . . \$3.25 each. . . . . 35%  
Knox, 6-inch Rolls. . . . . \$3.60 each. . . . . 35%  
Eagle. . . . . 35%  
Eagle, 6½-inch Rolls. . . . . \$2.85. . . . . 35%  
Crown 4½-in. \$3.50; 6 in. \$4.00; 8 in. \$5.00 each. . . . . 35%  
Crown Jewel, 6 in. . . . . \$3.50 each. . . . . 35%  
American, 5 in. \$3.00; 6 in. \$3.40; 7 in. \$4.50 each. . . . . 35%  
Domestic Fluter. . . . . each. \$1.50  
Geneva Hand Fluter, White Metal. . . . .  
Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25. . . . . 30%  
Shepard Hand Fluter, No. 85, per doz. \$15.50. . . . . 40%  
Shepard Hand Fluter, No. 110, # doz. \$11.00. . . . . 40%  
Shepard Hand Fluter No. 95, # doz. \$8.00. . . . . 40%  
Combined Fluter and Sad Iron. . . . . 40%  
Hoisting. . . . . # doz. \$15.00. . . . . 30%  
**Washing**  
Moore's Hand Hoist, with Lock Brake. 20%  
Moore's Anti-Friction Differential Pulley Block. . . . . 20%  
Moore's Rope Differential Pulley Block. . . . . 20%  
Energy Mfg. Co.'s. . . . . 60%  
See also Blocks.  
**Mallets**  
Hickory. . . . . 20&10&20&10&10%  
Lignumvitae. . . . . 20&10&20&10&10%  
B. & L. Block Co., Hickory & L. V. . . . . 30&30&10%  
**Mattocks**—Regular list. . . . . 60&10&60&10&5%  
**Measures**  
Standard Fiberware, No. 1, peck. # dozen. \$8.60; ½ peck. \$8.00  
**Meat Cutters**  
See Cutters, Meat.  
**Menders, Harness**  
Per doz. . . . . \$2.00  
**Milk Cans**—See Cans, Milk.

**Mills—Coffee**

Box and Side, List, Jan. 1, 1888. 60&60&5%  
Net prices are often made which are lower than above discount.  
American, Enterprise Mfg. Co., list Jan. 17, 1893. . . . . 20%  
The Swift, Lane Bros. . . . . 30%  
Waddel's New Box Mills, Ideal Brand, New List. . . . . 60%

**Mincing Knives**

See Knives, Mincing.

**Molasses Gates**

See Gates, Molasses.

**Money Drawers**

See Drawers, Money.

**Mowers, Lawn**

Best Machines: 10-in. \$4; 12-in. \$4.50; 14-in. \$5; 16-in. \$5.50; 18-in. \$6.

Low-Grade Machines: 10-in. \$3; 12-in. \$3.25; 14-in. \$3.50 each

**Muzzles**

Safety. . . . . # doz. \$3.00, 25%

**Nails**

Cut and Wire. See Trade Report.

Wire Nails, Papered.

Association list, May 1, '92. 80&10&10&5%

Tack Mfrs.'s list. . . . . 70&85&10&10%  
Hungarian, Finishing, Upholsterers', &c. See Tools.

**Horse**

Nos. 6 7 8 9 10  
American. . . . . 84 84 84 84 84 . . . . . net  
Ausable. . . . . 28 26 25 24 23

Clinton, Fin. 19. . . . . 174 164 154 144 134. . . . . 30&10&2%  
Essex. . . . . 28 26 25 24 23

Lyra. . . . . 197 174 164 154 144. . . . . 40&10&2%  
Snowden. . . . . 197 174 164 154 144. . . . . 40&10&2%  
Vulcan. . . . . 23 21 20 19 18. . . . . 25&2%  
Northwest'n. . . . . 23 22 21 20 19. . . . . 25&2%  
A. C. . . . . 25 23 22 21 20. . . . . 25&2%  
C. B. K. . . . . 25 23 22 21 20. . . . . 25&2%  
Maud S. . . . . 25 23 22 21 20. . . . . 25&2%  
Champlain. . . . . 28 26 25 24 23. . . . . 40&10&2%  
Saranac. . . . . 23 21 20 19 18. . . . . 40&8%  
Champion. . . . . 25 23 22 21 20. . . . . 40&10&2%  
Capewell. . . . . 194 174 164 154 144. . . . . 10&10&10%  
Anchor. . . . . 23 21 20 19 18. . . . . 8%  
Western. . . . . 23 21 20 19 18. . . . . 50%  
Empire Bronzed. . . . . 13@14 # D. . . . . 25&2%  
Picture

Brass Head, Sargent's list. . . . . 60&60&10%  
Brass Head, Combination list. . . . . 50&10%  
Porcelain Head, Sargent's list. 60&10&10%  
Porcelain Head, Combination list. 40&10%  
Niles' Patent. . . . . 40%  
Niles' Patent. . . . . 13@14 # D.

**Nail Pullers**—See Pullers, Nail.**Nail Sets**—See Sets, Nail.**Nut Crackers**

See Crackers, Nut.

**Nuts**—List Dec. 18, 1889.

Square, Hex. . . . .  
Hot Pressed. . . . . 5.80# 6.50¢ off list

Cold Punched. . . . . 5.00# 6.10¢ off list

In packages of 100 lb. add 1-10¢ # D. net; in packages less than 100 lb. add ½ # D. net.

**Oakum**

Best or Government. . . . . 60&60&10%  
U. S. Navy. . . . . 60&60&10%  
Navy. . . . . 56&54&54%  
Oil Tanks—See Tanks, Oil.

**Oilers**

Zinc and Tin. . . . . 65&10@70&75%  
Brass and Copper. . . . . 50&10@50&10&5%

Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40 # doz.

10@10&5%

Malleable, Hammers' Old Pattern, same list. . . . . 45%

Prior's Pat. or "Paragon" Zinc. . . . . 60&10&10%  
Prior's Pat. or "Paragon" Brass. . . . . 60&10%  
Olmstead's Tin and Zinc. . . . . 60%  
Olmstead's Brass and Copper. . . . . 60%  
Broughton's Zinc. . . . . 60%  
Broughton's Brass. . . . . 60%  
Steel, Draper & Williams. . . . . 60%

**Openers, Can**

Messenger's Comet. . . . . # doz. \$3.00, 25%

American. . . . . # gross \$2.75@\$3.00

Duplex. . . . . # doz. 25¢, 15@20%

Lyman's. . . . . # doz. \$3.75, 20%

No. 4, French. . . . . # doz. \$2.25, 55@60%

No. 5, Iron Handle. . . . . # gr. \$6.00, 45@50%

Eureka. . . . . # doz. \$2.50, 10%  
Sardine Scissors. . . . . # doz. \$2.75@2.75

Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50; 66@70%

Excelsior, No. 1, \$2.50; No. 2, \$1.50. . . . . 40%  
World's Best. . . . . # gross. No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00. . . . . 50&10%  
Universal. . . . . # doz. \$3.00. . . . . 55&8%  
Domestic. . . . . # doz. \$2.00. . . . . 25%  
Champion. . . . . # doz. \$2.00. . . . . 50%  
Moore's. . . . . 70%

**Packing, Steam**

Rubber—

Standard. . . . . 70@70&10%

Extra. . . . . 60@60&5%

N. Y. B. & P. Co. Standard. . . . . 50%  
N. Y. B. & P. Co. Empire. . . . . 60%  
N. Y. B. & P. Co. Salamanader. . . . . 25%  
Jenkins' Standard. . . . . # D. 80%. . . . . 25@25&5%

**Miscellaneous**

American Packing. . . . . 10@11¢ # D.

Russia Packing. . . . . 14¢ # D.

Italian Packing. . . . . 13¢@14¢ # D.

Cotton Packing. . . . . 15¢@16¢@17¢ # D.

Jute. . . . . 7¢@8¢ # D.

**Palls**

Creamery—

S. S. & Co. 18-qt. \$7.00; 20-qt. \$7.25

per doz. . . . . 5¢

**Plates**

S. S. & Co. 18-qt. \$7.00; 20-qt. \$7.25

per doz. . . . . 5¢

**Plates**

Stanley R. & L. Co. 18-qt. \$7.00; 20-qt. \$7.25

per doz. . . . . 5¢

**Plates**

Stanley R. & L. Co. 18-qt. \$7.00; 20-qt. \$7.25

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per doz. . . . . 5¢

**Plates**

Stanley R. & L. Co. 18-qt. \$7.00; 20-qt. \$7.25

per doz. . . . . 5¢

**Plates**

Stanley R. & L. Co. 18-qt. \$7.00; 20-qt

**Fullers, Nail-**

Seranton..... \$18.00, 82¢  
Curtis Hammer..... \$18.00, 10¢  
Giant, No. 1..... \$18.00, 10¢  
Giant, No. 2..... \$15.00, 10¢  
Pelican..... \$18.00, 25¢  
Eclipse..... Each, \$2.00 net  
Economy..... \$18.00, 10¢

**Pulleys-**

Hot House Awning, &c..... 66¢@70¢  
Japaned Screw..... 60¢@10¢  
Brass Screw..... 70¢  
Japaned Side..... 60¢@10¢  
Moore's Side, Anti-Friction..... 50¢  
Moore's Cel'log or End, Anti-Friction..... 40¢  
Moore's Dumb Waiter, Anti-Friction..... 50¢  
Moore's Electric Light..... 35¢  
Japaned Clothes Line..... 60¢@10¢  
Hay Fork, Solid Eye, \$1.00; Swivel, \$1.50..... 50¢@10¢@50¢@10¢  
Hay Fork, "Anti-Friction," 6 in. solid, \$1.70..... 50¢  
Hay Fork, "F" Common and Patent Bushed..... 20¢  
Hay Fork, Tarbox Pat. Iron..... 20¢  
Hay Fork Reed's Self-Lubricating..... 90¢  
Hay Fork, Toore's Anti-Friction 6 in. Wheel, \$1.00, \$12.00..... 40¢  
Shade Rack..... 45¢  
Tackie Blocks—See Blocks.  
Shepard's Niagara, No. 28, \$1.00 doz 23¢ net  
Sash (Anger Mortise).  
Common Sense..... 60¢  
Empire..... 60¢  
Ideal, Nos. 2, 4, 10 & 16 { 30¢ less 1¢ }  
Acme..... } doz net.  
Star..... }  
On bbl. lots extra 5¢.  
Ideal, Nos. 25 and 55. { \$1.00 doz. 22¢ net.

**Pumps-**

Cistern, Best Makers..... 60¢@60¢@10¢  
Pitcher Spout, Best Makers..... 67¢@75¢@10¢  
Pitcher Spout, Cheaper G'ds. 75¢@75¢@10¢

**Punches-**

Saddler's or Drive, good..... \$1.00 doz., 60¢@65¢  
Bemis & Call Co.'s Cast Steel Drive, 50¢@55¢  
Bemis & Call Co.'s Springfield Socket, 55¢@58¢  
Spring, good quality..... \$1.00 doz., \$2.50@2.60  
Spring, Leach's Pat..... 15¢  
Bemis & Call Co.'s Spring..... 50¢@55¢  
Bemis & Call Co.'s Check..... 55¢  
Solid Tinnings', P. S. & W. Co., \$1.00 doz., 51.44  
Tinnings' Hollow Punches, P. S. & W. Co..... 20¢@22¢  
Rice Hand Punches..... 15¢  
Avery's Revolving..... 40¢  
Avery's Sawset and Punch—See Sawsets  
Niagara Hollow Punches..... 20¢@22¢  
Niagara Solid Punches..... 55¢

**Rail-**

Sliding Door, Wr't Brass..... \$1.00, 40¢  
Sliding Door, Bronzed Wr't Iron..... \$1.00, 40¢  
Sliding Door, Iron, Painted..... \$1.00, 40¢  
Barn Door, Light, In. 3¢, 5¢, 7¢  
Per 100 feet..... \$2.00 2.50 3.10, 10¢  
B. D. for N. E. Hangers..... Small, Med. Large.  
Per 100 feet..... \$3.16 2.70 3.25 Net

Terry's Steel Rail..... \$1.00, 40¢  
Victor Track Rail, 7¢ ft. 4¢, 5¢, 6¢  
Carrier, double braced, Steel Rail, 7¢ foot..... 3¢@4¢  
Lundy Parlor Door, Planed Edge, 7¢ ft. 7¢  
Moore's Steel Rail, 7¢ ft. 6¢, 7¢, 8¢, 10¢  
Moody Steel Rail, 7¢ ft. 6¢, 7¢, 8¢, 10¢

**Rakes-**

Cast Steel, Association g'ds. 70¢@70¢@5¢  
Cast Steel, outside g'ds. 70¢@70¢@5¢  
Malleable..... 70¢@70¢@5¢  
Gibbs' Lawn Rake..... \$1.00 doz., \$4.00  
Gibbs' Canton Lawn Rake..... \$1.00 doz., \$3.75  
Gibbs' Acme Lawn Rake..... \$1.00 doz., \$4.75  
Gibbs' Favorite Lawn Rake..... \$1.00 doz., \$3.00  
Gibbs' Crown Lawn Rake, No. 1..... \$1.00 doz., \$4.00  
Oneida Lawn Rake..... \$1.00 doz., \$4.00  
Fort Madison Prize Bow Brace and Peerless..... 65¢  
Fort Madison Steel Tooth Lawn Rake, 8¢, 10¢, 12¢, 15¢, 20¢, 25¢

**Razors-**

J. R. Torrey Razor Co..... 20¢  
Wostenholm and Butcher, \$10 to \$100. 10¢  
Jordan's AAA, new list. Net  
Jordan's Old Faithful, new list. Net  
Galvanic..... \$1.00 doz., \$15.00  
Electric Cutlery Co. .... Net  
Campbell Cutlery Co. .... 50¢

**Razor Straps-**

See Straps, Razor.  
**Registers-**  
Moore's Japaned..... 75¢  
Moore's El-ctriptated..... 75¢  
Moore's Bronze Finishes..... 70¢  
Moore's Solid Bronze..... 65¢  
Moore's Stove Pipe..... 33¢@3¢

**Rings and Ringers-**

Bull Rings—  
Union Nut Co..... 55¢  
Sargent's..... 75¢@10¢  
Hotchkiss' low list..... 90¢  
Humason, Buckley & Co.'s..... 70¢@10¢  
Peek, Stow & W. Co.'s, 50¢@10¢@20¢@10¢  
Ellrich Hdw. Co., White Metal, low list, 50¢@60¢@10¢  
Hog—  
Top of the Hill Ringers..... \$1.00 doz.  
Top of the Hill Rings..... \$1.00 doz. 1.25  
Hill's Improved Ringers..... \$1.00 doz. 1.25  
Hill's Old Style Ringers..... \$1.00 doz. 1.25  
Hill's Tongs..... \$1.00 doz. bx \$1.00  
Perfect Rings..... \$1.00 doz. bx \$1.50  
Blair's Hog Ringers..... \$1.00 doz. \$2.00  
Blair's Hog Rings..... \$1.00 doz. \$2.00  
Champion Ringers..... \$1.00 doz. \$2.00  
Champion Rings, Double..... \$1.00 doz. \$2.25  
Brown's Ringers..... \$1.00 doz. \$2.00  
Brown's Rings..... \$1.00 doz. \$1.15@\$1.25  
Electric Hog Rings..... \$1.00 doz. boxes \$1.50  
Electric Hog Ringers..... \$1.00 doz. \$2.00  
Major Rings..... \$1.00 doz. \$2.25  
Major Ringers..... \$1.00 doz. \$2.00

**Rivets and Burrs-**

Norway iron list Nov. 17, '87..... 60¢@10¢  
Second quality..... 70¢  
Copper..... 60¢@60¢@10¢  
Coppered Iron, Bettina Brand..... 50¢@5¢

**Rivet Sets—See Sets.****Roasting and Baking Pans—See Pans, Roasting and Baking.****Rods-**

Hair, Brass..... 25¢@30¢  
Hair, Black Walnut..... \$1.00 doz. 40¢

**Rollers-**

Barn Door, Sargent's list..... 60¢@10¢@10¢  
Acme Moore's Anti-Friction..... 55¢  
Union Barn Door Roller..... 70¢  
Moore's Barn Door Stay..... 50¢  
Thompson Mfg. Co.'s Lawn Roller..... 80¢

**Rope**—The following prices are f.o.b. New York or factory, and are shaded  $\frac{1}{4}$ ¢@ $\frac{1}{4}$ ¢ on large lots, terms, 1½% for cash.

Manila, 7-16 in. diam. and larger..... \$1.00  
Manila, 7-16 in. diam. and larger..... \$1.00  
Manila, 7-16 in. diam. and larger..... \$1.00  
Manila, Tarred Rope..... \$1.00  
Manila, Hay Rope..... \$1.00  
Sisal..... 7-16 inch and larger..... \$1.00  
Sisal..... 7-16 in. and 18 in. ..... \$1.00  
Sisal, Hay Rope..... \$1.00  
Sisal, Tarred Rope..... \$1.00  
Sisal, Medium Lath Yarn..... \$1.00  
New Zealand, 7-16 in. & larger..... \$1.00  
New Zealand, 7-16 in. & larger..... \$1.00  
New Zealand, Hay Rope..... \$1.00  
New Zealand, Tarred Rope..... \$1.00  
Cotton Rope..... \$1.00  
Jute Rope..... \$1.00

**Wire—**  
List February, 1892. All kinds..... 45¢  
**Rules—**  
Boxwood..... 90¢@10¢@10¢@80¢@10¢@10¢  
Ivory..... 50¢@10¢  
Starrett's Steel Rules and Straight Edges..... 25¢@10¢

**Sad Irons—See Iron, Sad.****Sand and Emery Paper and Cloth—**  
See Paper and Cloth.**Sash Cord—See Cord, Sash.****Sash Locks—See Locks, Sash.****Sash Weights—**  
See Weights, Sash.**Sausage Stuffers or Fillers—See Stuffers or Fullers, Sausage.****Saws—**

Dissont's Circular..... 45¢@45¢@5¢  
Dissont's Cross Cut, list Jan. 1, '93 40¢@10¢  
Dissont's Hand..... 40¢@10¢@5¢  
Woodrough & McFarlin  
Hand, Panel and Rip..... 25¢@10¢  
Cross Cuts, list Jan. 1, 1893..... 45¢@10¢  
Wheeler, Madden & Clemson Mfg. Co.  
Hand, Panel and Rip..... 30¢@10¢  
Cross Cuts, list Jan. 1, 1893..... 45¢@10¢  
Atkins' Circular..... 50¢@10¢  
Atkins' Cross Cuts, new list..... 40¢  
Atkins' Mulay, Mill and Drag..... 60¢@10¢  
Atkins' One Man Saw..... 40¢@10¢  
Atkins' Wood Saws..... 40¢  
Peace Circular and Mill..... 45¢@45¢@5¢  
Peace Hand Panel and Rip..... 25¢@25¢@5¢  
Peace Cross Cuts, list Jan. 1, '93..... 45¢@10¢  
Richardson's Circular and Mill 45¢@45¢@5¢  
Richardson's X Cuts, list Jan. 1, '93 45¢@10¢  
Richardson's Hand, &c. .... 20¢@25¢@5¢  
Richardson's Hand, &c. .... 25¢@25¢@5¢  
Bemis & Call Co.'s brand..... 25¢@25¢@5¢

**Hack Saws—**

Griffin's, complete..... 40¢@10¢@50¢  
Griffin's Hack Saw Blades..... 40¢@10¢@50¢  
Star Hack Saws and Blades..... 25¢@25¢@5¢  
Eureka and Crescent..... 25¢@25¢@5¢

**Scroll—**

Lester, complete, \$10.00..... 25¢  
Rogers, complete, \$4.00..... 25¢  
Barnes' Builders and Cab Makers' \$16.25¢  
Barnes' Scroll Saw Blades..... 35¢

**Saw Frames—**  
See Frames, Saw.**Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality  
\$1.00 doz. \$18.00@\$19.00  
Hatch, Tea, No. 161, \$1.00 doz. \$6.50@\$7.00  
Union Platform, Plain..... \$2.10@2.20  
Union Platform, Striped..... \$2.40@2.50  
Chatillon's Grocers' Trip Scales..... 50¢  
Chatillon's Eureka..... 25¢  
Chatillon's Favorite..... 40¢  
Family Turnbells..... 30¢@30¢@40¢  
Riehle Bros.' Platform..... 40¢

**Scale Beams—**  
See Beams, Scale.**Scissors, Fluting..... 45¢****Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)  
\$6.00..... 30¢@10¢  
Box, 1 Handle..... \$2.25@\$2.50  
Box, 2 Handle..... \$2.00@\$3.00  
Defiance Box and Ship..... 20¢@10¢  
Foot..... 50¢@10¢@60¢  
Ship, Common..... \$1.00 doz. \$3.50 net  
Ship, R. I. Tool Co. .... 10¢

**Screen Window and Door Frames—See Frame.****Screw Drivers—**  
See Drivers, Screw.**Screws—****Bench and Hand—**

Bench, Iron..... 55¢@10¢@55¢@10¢@10¢  
Bench, Wood, Beech..... \$1.00 doz. 25¢  
Bench, Wood, Hickory..... 20¢@10¢  
Hand, Wood..... 25¢@10¢@25¢@10¢@5¢  
Hand, Grand Rapids, list..... 35¢

**Coach, Lag and Hand-Rail—**

Lag, Blunt Point, list Jan. 1, 1890..... 80¢@80¢@10¢  
Coach and Lag, Gimlet Point, list Jan. 1, 1890..... 80¢@80¢@10¢  
Hand Rail, Sargent's..... 70¢@10¢  
Hand Rail, H. & E. Mfg. Co. .... 70¢@10¢@75¢  
Hand Rail, Am. Screw Co. .... 75¢

**Jack Screws—**

Jack Screws, Miller's Falls list 50¢@50¢@10¢  
Jack Screws, P. S. & W. .... 85¢  
Jack Screws, Sargent's..... 70¢  
Jack Screws, Stearns'.... 40¢@10¢@10¢

**Tinners', &c.—**

Shears and Snips (P. S. & W.).... 20¢@20¢  
Snips, J. Mallinson & Co. .... 35¢@35¢

**Sheaves—****Sliding Door—**

M. W. Co., list July, 1888..... 50¢@10¢@40¢@50¢  
R. & E. list Dec. 18, 1885..... 55¢@10¢  
Corbin's list..... 60¢@10¢@50¢  
Patent Roller..... 60¢@10¢@50¢  
Patent Roller, Hatfield's..... 75¢  
Russell's Anti-Friction, list Dec. 18, 1885..... 60¢@10¢  
Moore's Anti-Friction..... 50¢

**Sliding Shutter—**

R. & E. list Dec. 18, 1885..... 60¢@10¢@50¢  
Sargent's list..... 70¢  
Reading list..... 60¢@10¢@10¢

**Shells—**

First quality 4, 8, 10 and 12 gauge  
25¢@10¢@5¢@10¢

First quality Rival, Club and Climax  
brands, 14, 16 and 20 gauge (75¢  
list)..... 20¢@10¢@5¢@10¢

Prize Star, Club, Rival and Climax  
brands..... 33¢@10¢@5¢@10¢

Smokeless brand, 12, 10, 16 gauge  
33¢@10¢@5¢@10¢

Trap brand, 12 and 10 gauge (33¢@10¢@5¢@10¢)  
Seibold's Comb. Shot Shells..... 15¢@25¢  
Brass Shot Shells, 1st quality..... 60¢@50¢  
Brass Shot Shells, Club, Rival, Climax..... 65¢@50¢

**Shells, Loaded—**

Standard List, July 19, 1890..... 40¢@10¢@10¢@10¢

**Ship Tools—**

L. & I. J. White..... 20¢@20¢

**Shoes, Horse, Mule, &c.—**

Horse—Burden's, Perkins', Phoenix, Standard,  
Diamond State, Bryden's Boss and  
Crescent, at factory..... \$1.00  
Bryden's Frog Pressure, at factory..... \$5.00

**Mule—**

Add \$1 per keg to above prices.  
**Ox Wrought—**  
Ton lots..... 10¢@10¢@10¢  
1000 lb. lots..... 10¢@10¢@10¢  
500 lb. lots..... 10¢@10¢@10¢

**Shot—**

Small lots.  
Drop, up to B, 25-lb bag..... \$1.45  
Drop, up to B, 5-lb bag..... .35  
Drop, B and larger, 25-lb bag..... 1.70  
Drop, B and larger, 5-lb bag..... .40  
Drop, B and larger, 10-lb bag..... .40  
Buck and Chilled, 25-lb bag..... 1.70  
Buck and Chilled, 5-lb bag..... .40  
Dust Shot, 25-lb bag..... 2.00  
Dust Shot, 5-lb bag..... .45

Dust Shot, 5-lb bag..... .45

**Shovels and Spades—**

Ames' Shovels, Spades, &c., list Nov. 1, 1885..... 20¢@20¢

Note.—Jobbers frequently give 5¢@10¢ extra on above.

Griffith's Black Iron..... 50¢@10¢

Griffith's C. S. .... 60¢@60¢@10¢

Griffith's Solid C. S. R. R. Goods..... 20¢@20¢

St. Louis Shovel Co. .... 20¢@20¢@10¢

Hussey, Blans & Co. .... 15¢@25¢

Hubbard & Co. .... 20¢@20¢@10¢

Leigh Mfg. Co. .... 50¢@10¢

H. M. Myers Co. .... 30¢@20¢

Payne Petetbone & Son. .... 35¢@25¢

Remington's (Lowman's Pat.) 40¢@10¢@5¢@5¢

Rowland's Black Iron. 60¢@10¢@5¢@5¢

Rowland's Steel. 60¢@5¢@5¢@5¢

Terra Haute Shovel & Spade Co. .... 35¢@35¢

**Shovels and Tongs—**

Iron Head..... 60¢@10¢@60¢@10¢@10¢

Brass Head..... 60¢@10¢@10¢@10¢

**Sieves and Sifters—**

Mann's Tin Rim..... 50¢@25¢

Buffalo Metallic, S. S. & Co. .... 50¢@25¢

Shaker (Barler's Pat.) Flour Sifters

Electric Light. 5¢ doz. \$1.50. 5¢ gr. \$21.00

A. & W. Sifters. 5¢ doz. \$1.50. 5¢ gr. \$15.00

Hunter's Genuine. 5¢ doz. \$1.75. 5¢ gr. \$16.50

Hunter's Imitation. 5¢ doz. \$1.75. 5¢ gr. \$15.00

**Sieves, Wooden Rim—**

Iron. Plated

Mesh 18, Nested, 5¢ doz. \$0.80. 1¢

Mesh 20, Nested, 5¢ doz. .95. 1¢

Mesh 24, Nested, 5¢ doz. 1.15. 1¢

**Sinks, Wrought Steel—**

Columbus, Painted or Unpainted. 30¢@30¢@10¢

Columbus, Galvanized and Enamelled. 50¢@50¢@10¢

New Era, Painted. 40¢@10¢@10¢@10¢@10¢

New Era, Galvanized and Enamelled. 60¢@10¢@10¢@10¢@10¢

**Skeins, Thimble—**

Western Hen. 75¢@10¢@10¢@10¢@10¢

Columbus Writ. Steel. Special net prices

Coldbrookdale Iron Co. .... 60¢@60¢@10¢

Seneca Falls Pattern. 60¢@60¢@10¢

Utica P. S. T. Skeins. 60¢@60¢@10¢

Utica Turned and Fitted. 60¢@60¢@10¢

**Slates—**

School, by case. 50¢@10¢@10¢@10¢@10¢

**Saw Cutters—See Cutters.****Sleds Hand—**

Tubular Steel. 5¢ doz. \$24.00. 40¢@50¢

Lot of 6 doz. 5¢

**Snaps, Harness, &c.-**

Anchor T. & S. Mfg. Co.	66¢
Mitch's (Bristol)	50¢ & 10¢
Hotskins	10¢
Andrews	50¢
Bargent's Patent Guarded	70¢ & 10¢ & 10%
German, new list	40¢ & 10¢
Cover	50¢ & 10¢ & 10%
Cover, New Patent	50¢ & 10¢ & 10%
Cover, New R. E.	60¢ & 10¢ & 10%
Covered Spring	60¢ & 10¢ & 10%
Cover's Saddlery Works Triumph	33¢ & 5¢
John Protz Snaps	75¢ & 65¢
Kelley & Woolworth's Steel Harness	50¢ & 10¢ & 60¢

**S N a t h s -** See Irons, Soldering.

**S h i t t o n s , C u s p i d o r s , &c.****S t a n d a r d F i b e r w a r e -**

Cushpards, 8½-inch, \$ doz., No. 5, \$8; No. 5½, \$9.

Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, \$8.

**S p o k e S h a v e s -** See Shaves, Spoke.

**S p o k e T r i m m e r s -** See Trimmers, Spoke.

**S p o o n s a n d F o r k s -****T i n n e d I r o n -**

Basting, Cen. Stamp. Co.'s list

Solid Table and Tea, Cen. Stamp. Co.'s list

Buffalo, S. S. & Co.

**S i l v e r P l a t e d -** 4 months or 5% cash 30 days:

Arden Brit. Co., Rogers

O. Rogers & Bros.

Rogers & Bros.

Reed & Barton

Wm. Rogers Mfg. Co.

Simpson, Hall, Miller & Co.

Holmes & Edwards Silver Co.

L. Boardman & Son

**M i c e l l a n e o u s -**

Holmes & Edwards Silver Co.:

No. 97 Mexican Silver

No. 30 Silver Metal

No. 24 German Silver

No. 50 Nickel Silver

No. 49 Nickel Silver

Wm. Rogers Mfg. Co.

Rogers' Silver Metal

183 Rogers' German Silver

229 Rogers' Nickel Silver

German Silver

German Silver, Hall & Elton

Nickel Silver

Britannia

Boardman's Nickel Silver, list July 1, 1891

Boardman's Brittania Spoons, case lots

**S p r i n g s -** Door

Torrey's Rod, 39 in.

Warren's No. 1, \$ doz. \$1.50; No. 2, \$3.40

55¢ @ 55¢ & 10¢

Gem (Coll.), list April 19, 1886

Star (Coll.), list April 19, 1886

Victor (Coll.)

60¢ & 10¢ @ 60¢ & 10¢ & 10¢

Champion (Coll.)

60¢ & 10¢ @ 60¢ & 10¢ & 10¢

Cowell's, No. 1, \$ doz. \$18.00; No. 2, \$16.00

50¢ @ 50¢ & 10¢

Bubber, complete, \$ doz. \$4.50

55¢ & 10¢

Hercules

50¢ @ 50¢ & 10¢

Phoenix

33¢ & 25¢

**C a r r i a g e , W a g o n , &c.-**

Elliptic Concord, Platform and Half

Scrool

60¢ & 10¢ @ 60¢ & 10¢ & 10¢ or net prices

Cliff's Bolster Springs

.25¢

**S q u a r e s -**

Steel and Iron

.80¢ & 10¢ & 10¢ @ 80¢ & 25¢

nickel-plated

try square and T-bevels

.80¢ & 10¢ & 10¢

Diaslon's try square and T-bevels

.50¢

Winterbottom's try and miter

.30¢ & 10¢

Starratt's micrometer calliper squares

.25¢

Avery's flush bevel squares

.40¢

Avery's bevel protractor

.50¢

**S queezers -**

Fodder

Blair's

Blair's "Climax"

\$ doz. \$2.00

Blair's "Lemon"

oreclain lined, No. 1, \$ doz. \$6.00

Wood, No. 2, \$ doz. \$8.00, 35¢

Wood, Common

\$ doz. \$1.70 @ 1.75

Dunlap's Improved

\$ doz. \$3.75, 20¢

Bamfils', No. 1, \$5.00; No. 2, \$9.12, \$18¢ & doz.

Jennings' Star

\$ doz. \$2.50

The Boss

\$ doz. \$2.50

Dean's, Nos. 1, \$ doz. \$6.50; 2, \$8.35; 3, \$1.90; Queen, \$2.50

Little Giant

.50¢ @ 50¢ & 5¢

King

.40¢ & 5¢

Hotchkiss straight flash

\$ doz. \$12.00

Eliver & Co., Glass

\$ gro. \$9.00

**S t a n d a r d F i b e r W a r e -**

See Ware, Standard Fiber.

**S t a p l e s -**

Barbed Blind, ½ in. and larger, \$ doz. \$7 @ 7½

Barbed Blind, ¾ in.

\$ doz. \$8 @ 8½

Fence Staples, Galvanized

{ same price

Fence Staples, Plain

{ see Br. wire

Grand Crossing Tack Co.'s list

.75¢ & 10¢

**S t e e l y a r d s -** .40¢ & 10¢ & 5¢

**S o c k s a n d D i e s -**

Blacksmith's

Waterford Goods

.35¢

Butterfield's Goods

.35¢

Lightning Screw Plate

.25¢ & 30¢

Beece's New Screw Plates

.25¢ & 30¢

Reversible Ratchet

.30¢

Gardner

.25¢

Green River

.25¢ & 30¢

**S tops , B e n c h -**

Morrill's, \$ doz., Nos. 1, \$9.50; 2, \$12.00

Hotchkiss's

\$ doz. \$5, 10¢ & 10¢ & 5¢

Weston's, No. 1 \$10; No. 2, \$9, 25¢ & 10¢ & 5¢

McGill's, \$ doz. \$3

Cincinnati

10¢ & 25¢

Terrell's Nos. 1 and 2, \$ doz. \$3; No. 3, \$6.60

Miller's Falls

25¢

Stearns'

20¢ & 10¢

**S tone -**

**S tones , Crind -** See Grindstones.

**Scythe Stones -**

Pike Mfg. Co., list April, 1892.

83¢ & 15¢

Cleveland Stone Co., list Nov. 1892.

83¢ & 15¢

**O ll Stones , &c. -**

Pike Mfg. Co.

\$ doz. \$8

Hindostan No. 1, \$ doz. \$8

Sand Stone

.5¢

Turkey Oil Stone, 4 to 8

in.

10¢ & 40¢

Turkey Slips

\$2.00

Lily White Washita

.60¢

Rosy Red Washita

.60¢

Washita Stone, Extra

.50¢

Washita Stone, No. 1

.40¢

Washita Stone, No. 2

.30¢

Lily White Slips

.90¢

Rosy Red Slips

.80¢

Washita Slips, Extra

.80¢

Washita Slips, No. 1

.70¢

Arkansas Stone, No. 1, 3 to 5

in.

.70¢ & 1.20¢

Arkansas Stone, No. 1 5/8 to 8 in.

.85¢

Lake Superior

.80¢

Lake Superior Slips

.80¢

**S po k e S h a v e s -**

See Shaves, Spoke.

**S po k e T r i m m e r s -**

See Trimmers, Spoke.

**S po o n s a n d F o r k s -**

Tinned Iron

Spring

Cast Iron, Steel Points

Electric Cutlery Co.

Net

Campbell Cutlery Co.

Net

Emerson

Net

Miller's

Net

Reed's

Net

Stearns'

Net

Taylor's

Net

Ward's

Net

Wicks'

**Whips**

American Whip Co.: Length.	44	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving.	\$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Sureks, Two-thirds Whalebone.	.....	15.00	16.50	18.00	20.00	.....	.....	.....
Bull Bone, Half-length Whalebone.	.....	.....	.....	.....	.....	.....	.....	.....
American Standard.	8.00	8.50	11.00	12.00	13.00	15.00	.....	.....
True Grip, Raw Hide Center.	6.00	6.00	6.50	7.00	7.50	9.00	.....	.....
New Name, Stocked Java, Black and Wine Colors.	.....	.....	6.00	.....	.....	.....	.....	.....
Americus, 98 Pen Whip.	.....	.....	6.00	.....	.....	.....	.....	.....
Genta's Light Driving No. 111.	.....	.....	6.00	.....	.....	.....	.....	.....
Genta's Light Driving No. 106.	.....	.....	5.00	.....	.....	.....	.....	.....
Hand-made Stocked Java No. 108.	.....	8.75	4.00	.....	.....	.....	.....	.....
A large variety of cheaper grades.	.....	.....	.....	.....	.....	50¢ to \$3.00	.....	.....
Team Whips.	.....	.....	.....	.....	.....	.....	\$.02 to \$.75	.....
Toy Whips.	.....	.....	.....	.....	.....	.....	\$.02 to \$.75	.....
Hardware Assortment, 10/American, 75 Whips for \$50.00.	.....	.....	.....	.....	.....	.....	.....	.....

Per dozen

Ossawa Mills, An'd and Tinne	on
Spools.	60&10%
Ossawa Mills, Brass and Copper on	.....
Spool.	60&10%
Tate's Spooled, Tin'd & Annealed.	.60&5%
Tate's Spooled Cop. and Brass.	.....
Cast Steel Wire.	.....
Stubs' Steel Wire.	\$.00 to 2, 30¢
Steel Music Wire, 12 to 30, Imported.	60&70¢ & 10¢
Wire Clothes Line, see Lines.	.....
Wire Picture Cord, see Cord.	.....
<b>Bright Wire Goods—</b>	.....
Standard list.	.86&10&10%
<b>Wire Cloth and Netting—</b>	.....
Painted Screen Cloth, 100 ft.	\$1.75 to \$2.00
Galvanized Wire Netting.	.75&75&10%

per dozen

Wire Barb—See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.	40¢
Baxter's Adjustable "S".	.40&10 to 50¢
Baxter's Diagonal.	.....
Coe's Genuine.	50&50 to 100¢
Coe's "Mechanics".	50&10 to 100¢
Girard Standard.	.65&10 to 70¢
Lamson & Sessions' Engineers'.	.60&10¢
Lamson & Sessions' Standard.	.70&10¢
P. S. & W. Agricultural.	.....
Girard Agricultural.	.75&10 to 80¢
Lamson & Sessions' Agri'l.	.....
W. & B. Diamond.	.....

per dozen

Bernis & Call's:	.....
Pat. Combination Bright.	.40&55¢
Pat. Combination Black.	.40 & 10¢
Merrick's Pattern.	.....
Brigg's Pattern.	.80&10%
Cylinder or Gas Pipe.	.....
No. 3 Pipe.	.55¢
Aiken's Pocket (Bright).	.66.00
Colby's Patent.	.....
The Favorite Pocket.	\$.00 to \$4.00
Webster's Pat. Combination.	.....
Boardman's.	.....
Always Ready.	.35 to .40¢
Alligator.	.50¢
Conrad's Engineer.	.20&10¢
Eagle.	.50&10¢
Aene, Bright.	.50&10¢
Aene, Nickled.	.40&10¢
Horniles.	.70&10&10¢
Walker's.	.55&10¢
Diamond Steel.	.55&10¢
Cincinnati Brace Wrenches.	.95 to 10¢
Taft's Vise Wrench.	.55&10&10¢

**Wringers, Clothes—**

Am. Wringer Co.'s list, Jan. 2.	93.25
Colby Wringer Co., list Sept. 1.	91.25
Lovell Mfg. Co., list Jan. 1, 1892.	25¢
Pearless Mfg. Co., list Feb. 1892.	25¢
National Wringer & Mfg. Co., list June 1, 1892.	25¢
Staples, Hooks, &c., list March 17, 1892.	25¢
W. & B. Diamond.	.95&10&10¢

**Wire and Wire Goods—****Iron—**

Market,	.....
Br. & Ann., Nos. 0 to 18.	75&10 to 75&10&5%
Cop'd., Nos. 0 to 18.	75&10 to 75&10&5%
Galv., Nos. 0 to 18.	75&10 to 75&10&5%
Tin'd., Tin'd. list, Nos. 0 to 18.	70&6 to 70&10&5%

Stone,	.....
Br. and Ann'd., Nos. 18.	80%
Br. and Ann'd., Nos. 19 to 28.	Extra 10% often given.
Br. and Ann'd., Nos. 27 to 36.	80&5%
Tinned.	.65&10%

Tin'd. Broom Wire, 18 to 21, 1 lb. 44¢

Galvanized Fence, 18 to 21, 1 lb. 75&amp;10¢

Brass, list, Jan. 18, 1892. 40&amp;5%

Copper, list, Jan. 18, 1892. 40&amp;5%

Annealed Wire on Spools. 60&amp;5%

Malin's An'ded &amp; Tin'd on Spools. 60&amp;5%

Malin's Brass and Cop. on Spools. 50&amp;5%

# Paints, Oils and Colors.—Wholesale Prices.

**Animal and Vegetable Oils**

Cyliner, dark, filtered.	10 @ 13
Paraffine, 23½ to 24 gravity.	11 @ 12
Paraffine, 25 gravity.	10 @ 11
Paraffine, 28 gravity.	7½ @ 8
Paraffine, red.	1½ @ 10%
Barytes, Foreign, 10 ton.	\$22.00 @ 24.00
Barytes, Amer., floated.	.29.00 @ 32.00
Barytes, Amer. No. 1.	16.00 @ 18.00
Barytes, Amer. No. 2.	13.00 @ 15.00
Barytes, Amer. No. 3.	11.00 @ 12.00
Blue, Celestial.	6 @ 8
Blue, Chinese.	40 @ 50
Blue, Prussian.	25 @ 40
Blue, Ultramarine.	8 @ 25
Brown, Spanish.	1½ @ 1
Brown, Vandyke Amer.	3 @ 8
Brown, Vandyke English.	6 @ 8
Carmine, No. 40, in bulk.	2.75 @ ..
Carmine, No. 40, in boxes or barrels.	2.85 @ ..
Carmine, No. 40, in ounce bottles.	3.75 @ ..
Chalk, in bulk.	2½ ton. 2.40 @ 2.50
Chalk, in bbls.	100 lb. 33 @ 40
China Clay, English.	1 ton. 13.00 @ 18.00
Cobalt Oxide, prep'd.	9.00 @ 11.00
Cobalt Oxide, black.	lots 100 lb. 1.90 @ ..
Cobalt Oxide, black.	less than 100 lb. 1.96 @ ..
Green, Paris, in bulk.	10 @ 10%
Green, Paris, 170 @ 175 lb.	1.00 @ 1.10
Kegs, lots less than 500 lb.	7 @ 7½
Kegs, lots 500 lb. to 5 tons.	6½ @ 6½
Kegs, lots 5 tons to 12 tons.	6½ @ 6½
Kegs, lots 12 tons and over.	6½ @ 6½
Lead, Eng., B.B. white.	8½ @ 10
Lead, Amn. White, dry or in oil.	10 @ 11
Kegs, lots less than 500 lb.	7 @ 7½
Kegs, lots 500 lb. to 5 tons.	6½ @ 6½
Kegs, lots 5 tons to 12 tons.	6½ @ 6½
Kegs, lots 12 tons and over.	6½ @ 6½
Lead, White, in oil, 25 lb. tin pails, add to keg price.	.. @ ..
Lead, White, in oil, 12½ lb. tin pails, add to keg price.	.. @ ..
Lead, White, in oil, 1 to 5 lb. assort'd tins, add to keg price.	.. @ ..
Lead, Red, bbls. and ½ bbls.	6 @ 6½
Lead, Red, kegs.	6½ @ 7½
Litharge, kegs.	6½ @ 7½
Litharge, bbls. and ½ bbls.	6 @ 7

**Paints and Colors—**

TERMS, &c.—Lead and Litharge.—On lots of 500 lb. or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.	.....
Ocher, Rocheile.	1.35 @ 1½
Ocher, French Washed.	1½ @ 2½
Ocher, German Washed.	1½ @ 3
Ocher, American.	1½ @ 1½
Orange Mineral, English.	8½ @ 9
Orange Mineral, French.	10 @ 10½
Orange Mineral, German.	8½ @ 9
Orange Mineral, American.	8½ @ 8½
Paris White, English Cliff-stone.	1.00 @ 1.15
Paris White, American.	65 @ 75
Red, Indian, English.	5½ @ 7
Red, Indian, American.	2 @ 6½
Red, Turkey.	9 @ 11
Red, Venetian, American.	100 lb. 1.00 @ 1.10
Red, Venetian, English.	1.20 @ 1.35
Sienna, Italian, Burnt and Powd.	4 @ 5
Sienna, Ital. Burnt, Lumps.	1½ @ 3½
Sienna, Ital. Raw, Powd.	1½ @ 5½
Sienna, Ital. Raw, Lumps.	1½ @ 3½
Sienna, American, Raw.	1½ @ 1½
Sienna, American, Burnt and Powdered.	1½ @ 1½
Talc, French.	1 @ 1½
Talc, American.	1½ @ 1½
Terra Alba, Fr'ch.	100 lb. 95 @ 12.5
Terra Alba, English.	70 @ 80
Terra Alba, American No. 1	65 @ 75
Terra Alba, American No. 2	45 @ 50
Umber, Turkey, Burnt and Powdered.	3½ @ 4
Umber, Turkey Bnt. Ln.	3½ @ 3
Umber, Turkey, Raw and Powdered.	3½ @ 3½
Umber, Turkey, R'w Lumps.	2½ @ 3½
Umber, Turkey, Bnt. Amer.	1½ @ 1½
Umber, Turkey, Burnt and Powdered.	3½ @ 4
Yellow, Chrome.	10 @ 25
Vermilion, American Lead.	11½ @ 12
Vermilion, Quicks'rt, bulk.	57 @ ..
Vermilion, Quicks'rt, bags.	53 @ ..
Vermilion, Quicksilver sm't pkgs.	62 @ 55
Vermilion, English Import.	85 @ 90
Vermilion, Illustration, Eng.	8 @ 55
Vermilion, Trieste.	90 @ 92½
Vermilion, Chinese.	92½ @ 95
French.	10 @ 22
English.	10 @ 18
Irish.	12 @ 18

**Putty—**

In barrels and ½ bbls.	.013 @ .014
In tubs.	.015 @ .016
In tin cans.	.017 @ .018
In bladders.	.018 @ .019
3 fl. oz.	.024

**Spirits Turpentine—**

In regular bbls.	.. @ 29½
In machine bbls.	.. @ 30

**Clue—**

Low Grade.	8 lb. 8 @ 10
Cabinet.	12 @ 14
Medium White.	13 @ 15
Extra White.	17 @ 20
Vermilion, Chinese.	92½ @ 95
French.	10 @ 22
English.	10 @ 18
Irish.	12 @ 18
DAVID WILLIAMS, Publisher.	.....
THOMAS HOBSON, Manager.	.....
ROBERT A. WALKER, Manager.	.....
J. K. HANES, Business Manager.	.....
GEO. W. COPE, Resident Asso. Ed.	.....
HENRY SMITH, Manager.	.....
H. H. ROBERTS, Manager.	.....
WALTER C. ENGLISH, Manager.	.....
EZRA S. ADAMS, Manager.	.....

**RATES OF ADVERTISING:**

ONE SQUARE (12 LINES, ONE INCH).

ONE INSERTION	—	—	—	—	—	\$30.00
ONE MONTH,	—	—	—	—	—	50.00
THREE MONTHS,	—	—	—	—	—	Rates for larger spaces quoted on application.
New York (Main Office),	-	-	96-102 Reade Street,	-	-	DAVID WILLIAMS, Publisher.
Philadelphia,	-	-	220 South Fourth Street,	-	-	THOMAS HOBSON, Manager.
Pittsburgh,	-	-	Room 509, Hamilton Building.	-	-	ROBERT A. WALKER, Manager.
Chicago,	-	-	59 Dearborn Street, cor. Randolph,	-	-	{ J. K. HANES, Business Manager.
Cincinnati,	-	-	Rooms 22-24 Pickering Building,	-	-	GEO. W. COPE, Resident Asso. Ed.
St. Louis,	-	-				

# CURRENT METAL PRICES.

JUNE 28, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

**IRON AND STEEL—  
Bar Iron from Store—**

Common Iron:	
1 1/2 to 2 in. round and square.	\$ 1.80 @ 1.90¢
1 to 6 in. x 3/8 to 1 in. ....	\$ 1.90 @ 2.00¢
<b>Seamed Iron:</b>	
1 to 2 in. round and square.	\$ 1.90 @ 2.00¢
1 to 4 in. x 3/8 to 1 1/2 in. ....	\$ 2.00 @ 2.10¢
4 to 6 in. x 3/8 to 1 in. ....	\$ 2.10 @ 2.20¢
1 to 6 in. x 1/2 and 5/8 in. ....	\$ 2.20 @ 2.30¢
Rods—5/8 and 11/16 round and sq. ....	\$ 2.00 @ 2.10¢
Bands—1 to 6 x 3/8 to No. 12. ....	\$ 2.20 @ 2.30¢
"Burden Best" Iron, base price. ....	\$ 3.00¢
Burden's "H. B. & S." Iron, base price....	\$ 2.80¢
"Ulster". ....	\$ 3.00¢
Norway Bars. ....	3.75 @ 4.00¢
Norway Shapes. ....	4.50 @ 5.00¢

**Merchant Steel from Store—**

Per lb		
Open-Hearth and Bessemer Machinery,		
Toe Calk, Tire and Sleigh Shoe, base price in small lots. ....	21¢	
Best Cast Steel, base price in small lots. ....	8¢	
Best Cast Steel Machinery, base price in small lots. ....	5¢	
<b>Sheet Iron from Store—</b>		
Black—		
Common R. G. Cleaned American. ....	31¢	
Nos. 10 to 16. ....	31¢	
17 to 20. ....	31¢	
21 to 24. ....	31¢	
25 and 26. ....	35¢	
27. ....	37¢	
28. ....	39¢	
American B. B. ....	37¢	
Russia, Planished, &c.		
Genuine Russia, according to assortment. ....	\$ 12 @ 13¢	
Patent Planished. ....	\$ 10 A. 10¢; B. 9¢, 5¢	
Craig Polished Sheet Steel. ....	\$ 10 B. 8¢	
<b>Galvanized.</b>		
B. B.		
Nos. 10 to 16. ....	4¢	
17 to 22. ....	4¢	
23 to 24. ....	4¢	
25 to 26. ....	4¢	
27. ....	5¢	
28 to 30. ....	5 1/2¢	
31. ....	6 1/4¢	
<b>English Steel from Store—</b>		
Best Cast. ....	\$ 15	
Extra Cast. ....	\$ 16 1/2 @ 17	
Swaged, Cast. ....	\$ 18	
Best Double Shear. ....	\$ 15	
Blister, 1st quality. ....	\$ 12	
German Steel, Best. ....	\$ 10	
2d quality. ....	9	
3d quality. ....	8	
Sheet Cast Steel, 1st quality. ....	\$ 15	
2d quality. ....	14	
3d quality. ....	12	
" Mushet's "Special". ....	18	
" " " Titonic". ....	Annealed. \$ 75	
" " " Titonic". ....	D. 20	
<b>METALS—</b>		
Tin—		
Banca, Pigs. ....	22¢ @ 21 1/4¢	
Straits, Pigs. ....	21 1/4¢	
Straits in Bars. ....	22 1/4¢	
<b>Tin Plates—</b>		
Duty. ....	2 1/2¢ per lb.	
Charcoal Plates—Bright—		
Guaranteed Plates command special prices, according to quality. ....	Per box.	
Melyn and Calland Grade. IC, 10 x 14. ....	\$ 8.50	
" " " " IC, 12 x 12. ....	6.75	
" " " " IC, 14 x 20. ....	6.50	
" " " " IC, 20 x 28. ....	13.00	
" " " " IX, 10 x 14. ....	8.50	
" " " " IX, 12 x 12. ....	8.75	
" " " " IX, 14 x 20. ....	8.50	
" " " " IX, 20 x 28. ....	17.00	
" " " DC, 12 1/2 x 17. ....	6.00	
" " " DX, 12 1/2 x 17. ....	8.00	
Allaway Grade. ....	IC, 10 x 14. ....	6.00
" " " " IC, 12 x 12. ....	6.25	
" " " " IC, 14 x 20. ....	8.00	
" " " " IC, 20 x 28. ....	12.00	
" " " " IX, 10 x 14. ....	7.50	
" " " " IX, 12 x 12. ....	7.75	
" " " " IX, 14 x 20. ....	7.50	
" " " " IX, 20 x 28. ....	15.00	
" " " DC, 12 1/2 x 17. ....	5.50	
" " " DX, 12 1/2 x 17. ....	7.00	
<b>Coke Plates—Bright—</b>		
Steel Coke.—IC, 10 x 14, 14 x 20. ....	\$ 5.50	
10 x 20. ....	8.50	
20 x 28. ....	11.50	
IX, 10 x 14, 14 x 20. ....	7.00	
BV Grade.—IC, 10 x 14, 14 x 20. ....	5.80	
<b>Charcoal Plates—Terne—</b>		
Guaranteed Plates command special prices, according to quality. ....	Per box.	
Dean Grade.—IC, 14 x 20. ....	\$ 5.65	
20 x 28. ....	11.00	
IX, 14 x 20. ....	6.40	
20 x 28. ....	12.80	
Abecarne Grade.—IC, 14 x 20. ....	5.55	
20 x 28. ....	10.80	
IX, 14 x 20. ....	6.40	
20 x 28. ....	12.80	
<b>Tin Boiler Plates—</b>		
IXX, 4 x 26. ....	112 sheets. @ 18.35	
IXX, 14 x 28. ....	112 sheets. @ 14.50	
IXX, 14 x 31. ....	112 sheets. @ 18.00	
<b>American Terne Plates.—Apollo—</b>		
IO, 14 x 20. ....	6.25	
IO, 20 x 28. ....	12.50	
IX, 14 x 20. ....	7.25	
IX, 20 x. ....	14.50	

Copper—	
DUTY: Pig, Bar and Ingot. 1 1/4¢	Old Copper. 1¢
Manufactured (including all articles of which Copper is a component of chief value),	2 1/2¢
35% ad valorem.	
Lake. ....	@ 12¢
Ansonia grade Arizona. ....	@ 11 1/2¢
Ansonia grade Casting. ....	@ 11¢

Ingot—	
Lake. ....	@ 12¢
Ansonia grade Arizona. ....	@ 11 1/2¢
Ansonia grade Casting. ....	@ 11¢
Sheet and Bolt—	

Prices adopted by the Association of Copper

Manufacturers of the United States, May

19, 1892. Subject to a discount of 15% @ 25%,

according to size of order.

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